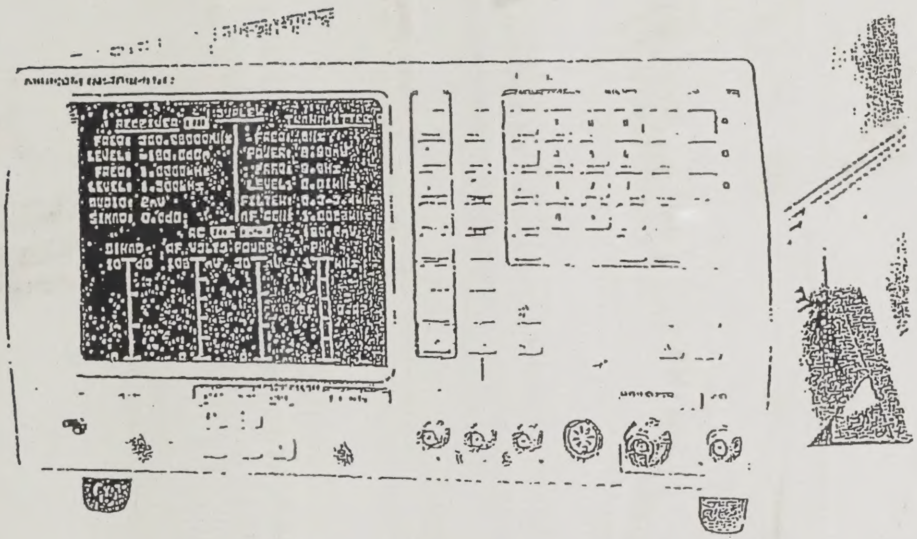
Marconi
Instruments

RADIO COMMUNICATIONS TEST SET

2955B



Service Manual

Maintenance Manual

RADIO COMMUNICATIONS TEST SET

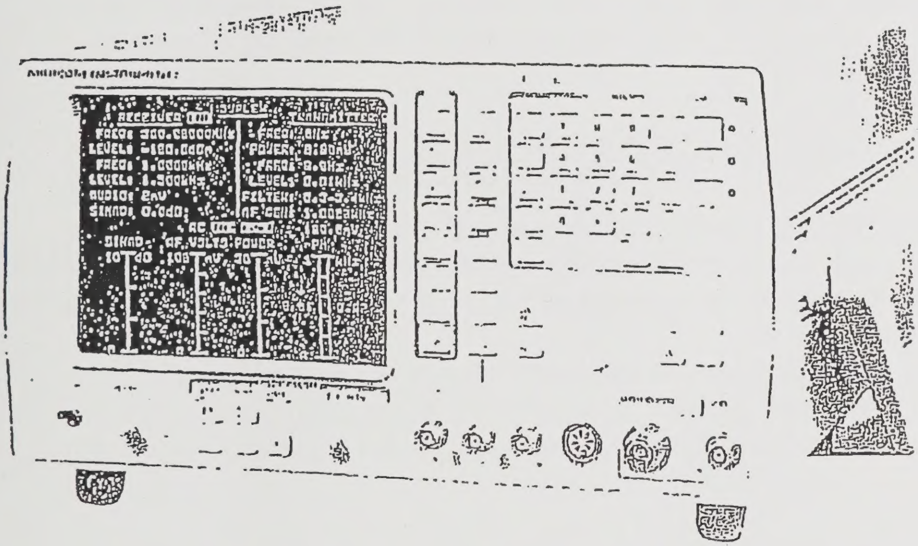
2955B

Part no. 52995-500J

Marconi
Instruments

RADIO COMMUNICATIONS TEST SET

2955B



Service Manual

RADIO COMMUNICATIONS TEST SET

2955B

Part no. 52995-500J

Printed in the UK

Manual part no. 46882-114B
Issue 3

CONTENTS

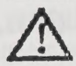
ASSOCIATED PUBLICATIONS

	Part no.
Operating Manual	46882-113R
Introductory Guide	46882-115K

PRECAUTIONS

HAZARD SYMBOLS

The meaning of hazard symbols appearing on the equipment is as follows:

Symbol	Nature of hazard	Reference in manual
	Dangerous voltage	Page iii
	Static sensitive component	Page iv
	Fire Hazard	Page iv

SAFETY

This product has been designed and tested in accordance with BS4743 'Specification for safety requirements for electronic measuring apparatus' and IEC Publication 348 'Safety requirements for electronic measuring apparatus'.

WARNING - ELECTRICAL HAZARDS

AC supply voltage. This equipment conforms with IEC Safety Class 1, meaning that it is provided with a protective earthing lead. To maintain this protection the supply lead must always be connected to the source of supply via a socket with an earthing contact.

Be aware that the supply filter contains capacitors that may remain charged after the equipment is disconnected from the supply. Although the stored energy is within the approved safety requirements, a slight shock may be felt if the plug pins are touched immediately after removal.

Fuses. Note that there are supply fuses in both the live and neutral wires of the supply lead. If only one of these fuses should rupture, certain parts of the equipment could remain at supply potential.

Removal of covers. Disconnect the supply before removing the covers so as to avoid the risk of exposing high voltage parts. If any internal adjustment or servicing has to be carried out with the supply on, it must only be performed by a skilled person who is aware of the hazard involved.

Cathode ray tube. When exposing or handling the tube, take care to prevent implosion and possible scattering of glass fragments. Handling should only be carried out by experienced personnel and the use of a safety mask and gloves is recommended. A defective tube should be disposed of in a safe manner by an authorized waste contractor.

WARNING - FIRE HAZARD

Make sure that only fuses of the correct rating and type are used for replacement.

If an integrally fused plug is used on the supply lead, ensure that the fuse rating is commensurate with the with current requirements of this equipment. See under 'Performance Data' in Chapter 1 for power requirements.

WARNING - TOXIC HAZARD

Some of the components used in this equipment may include resins and other materials which give off toxic fumes if incinerated. Take appropriate precautions, therefore, in the disposal of these items.

CAUTION - STATIC SENSITIVE COMPONENTS

The presence of static sensitive components is indicated in the equipment by yellow discs, flags or labels bearing the symbol . Certain handling precautions should be observed to prevent these components being permanently damaged by static charges or fast surges.

(1) If a printed board containing static sensitive components (as indicated by warning disc or flag) is removed, it must be temporarily stored in a conductive plastic bag.

(2) If a static sensitive component is to be removed or replaced, the following anti-static equipment should be used:

A work bench with a grounded conductive surface.
Metallic tools grounded either permanently or by repeated discharges.
A low-voltage grounded soldering iron.
A grounded wrist strap and a conductive grounded seat cover for the operator whose outer clothing should not be of man-made fibre.

(3) As a general precaution, avoid touching the leads of a static sensitive component. When handling a new one, leave it in its conducting mount until it is required for use.

(4) If using a freezer aerosol in fault finding, take care not to spray programmable ICs as this may affect their contents.

CAUTION - TILT FACILITY

When the instrument is in the tilt position, it is advisable, for stability reasons, not to stack other instruments on top of it.

Chapter 1

TECHNICAL DESCRIPTION

Contents (contd.)

Contents (contd.)

INTRODUCTION

In this chapter, the descriptions are in the order of the signal path from the RF input/output circuits to the display circuits and then the microprocessor and power supply circuits. Boards are grouped according to function and arranged in alphabetical order.

CIRCUIT SUMMARY

See Fig. 1–1.

The RF IN/OUT sockets are protected against overload and can be configured for simplex or duplex operation. The output from the RF signal generator can be modulated by either the AF generators or by an input through the EXT MOD INPUT socket. The outputs from the AF generators are also fed to the AF GEN OUTPUT socket. The RF generator and the AF generators are phase locked to the frequency standard which may be either internal or from an external standard which is connected to the EXT STD 1 MHz socket.

The RF signal input is fed to the RF counter, the RF power meter and the modulation meter. An output from the meter at the 110 kHz IF is fed to the IF OUT socket. The input to the voltmeter circuit is fed from the demodulator, from the AF INPUT socket or from the optional RF Directional Power Head which is connected to the ACCESSORY IN/OUT socket. Filters can be selected or automatically switched to provide the distortion and noise measurement functions. Analogue signals from the voltmeter and the power meter are converted to digital form for measurement by the microprocessor. From the filters, outputs are fed to the DE–MOD OUT socket and the audio amplifier for monitoring purposes, to the AF counter and to the oscilloscope for display.

Most of the functions of the instrument, including the display, are controlled by the microprocessor which responds to the front panel controls and regulates inputs and outputs on the GPIB.

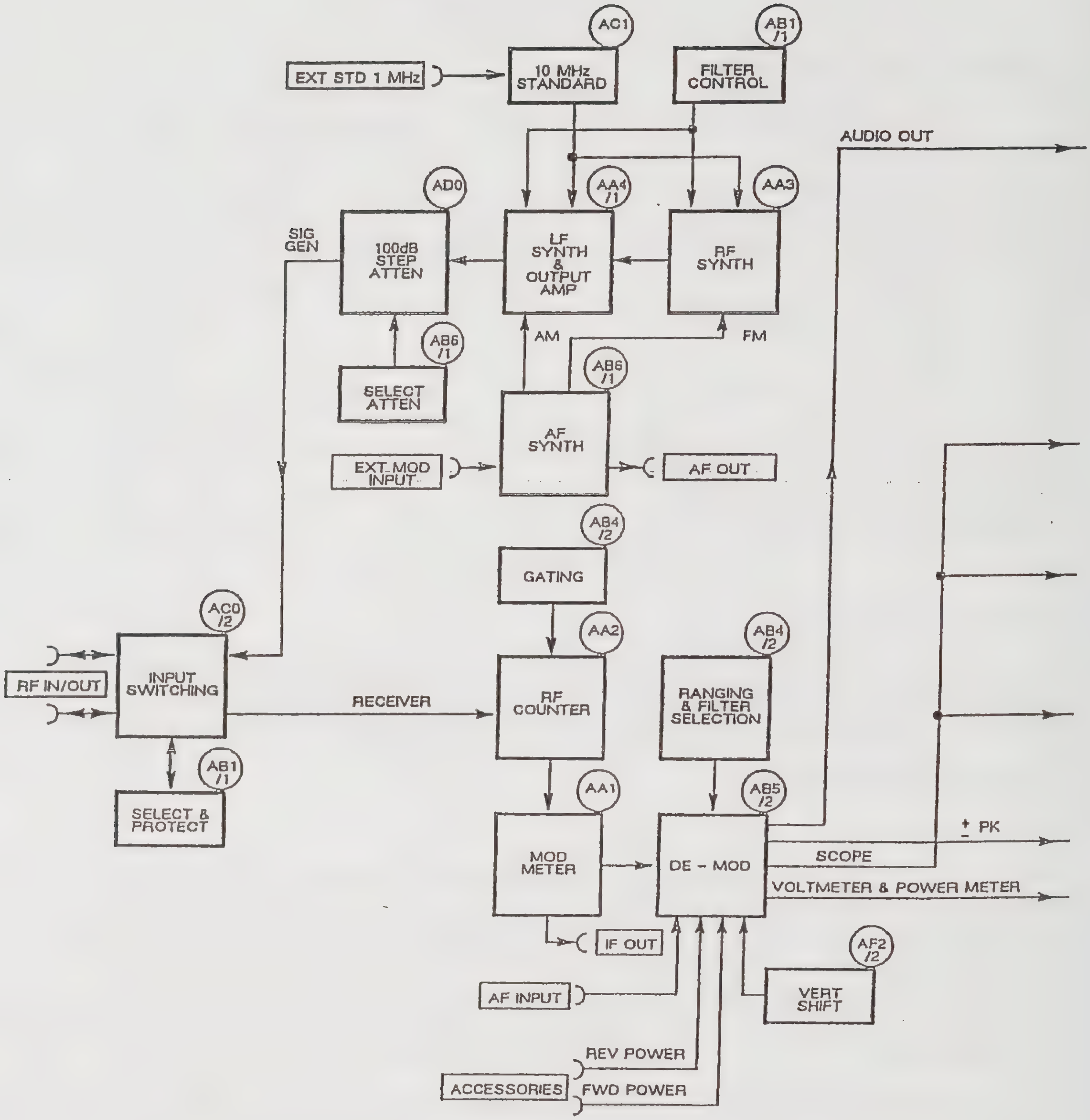
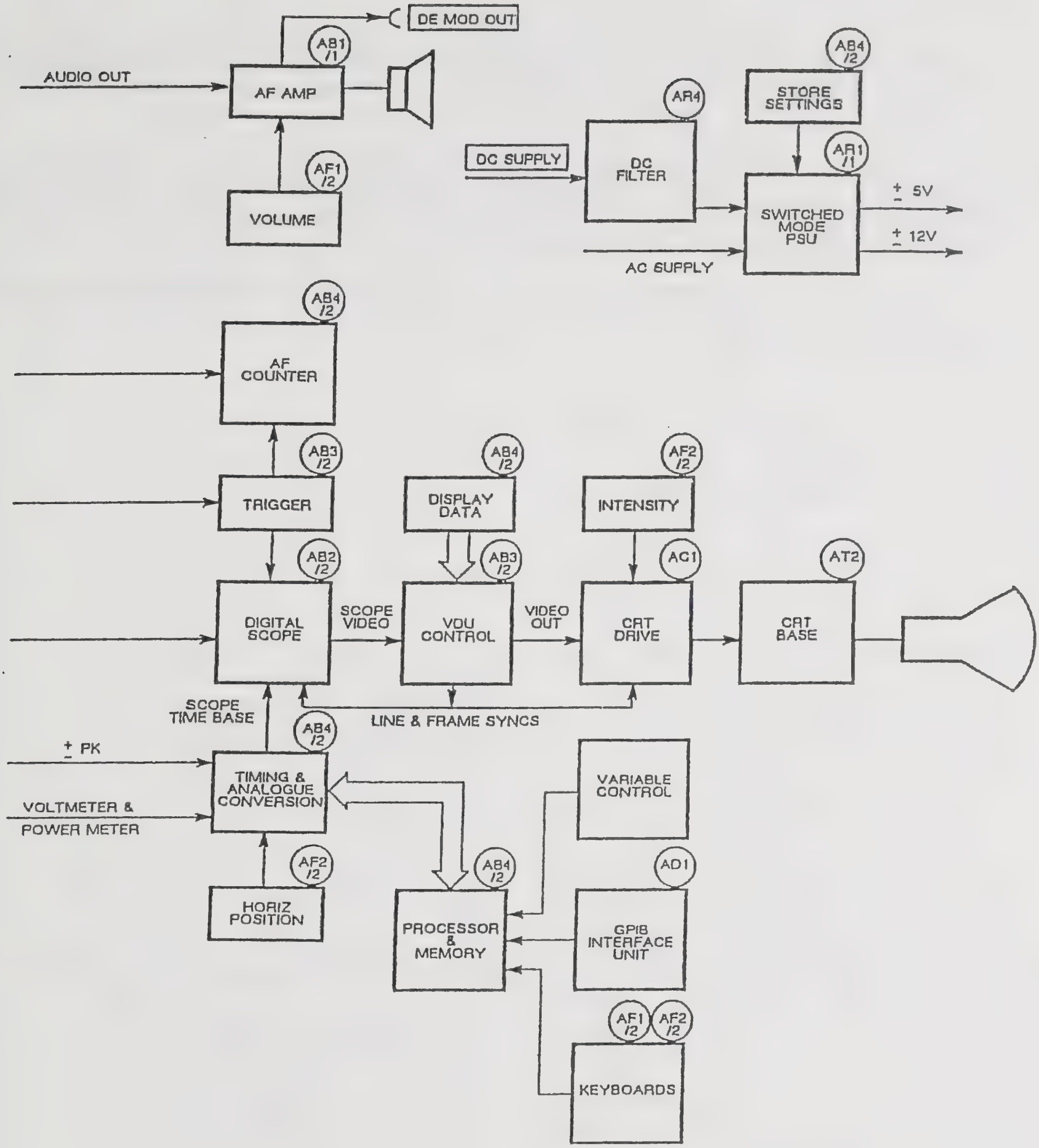


Fig. 1–1 Block diagram of the 2955B


DE MOD OUT
AB1 /1
AUDIO OUT
AF AMP
AF1 /2
VOLUME
AB4 /2
STORE SETTINGS
AR4
DC SUPPLY
DC FILTER
AR1 /1
SWITCHED MODE PSU
± 5V
± 12V
AC SUPPLY
AB4 /2
AF COUNTER
AB3 /2
TRIGGER
AB4 /2
DISPLAY DATA
AF2 /2
INTENSITY
AB2 /2
AB3 /2
AC1
AT2
DIGITAL SCOPE
SCOPE VIDEO
VDU CONTROL
VIDEO OUT
CRT DRIVE
CRT BASE
SCOPE TIME BASE
LINE & FRAME SYNCS
AB4 /2
± PK
TIMING & ANALOGUE CONVERSION
VOLTMETER &
POWER METER
VARIABLE CONTROL
AF2 /2
HORIZ POSITION
AB4 /2
AD1
PROCESSOR & MEMORY
GPIB INTERFACE UNIT
AF1 /2
AF2 /2
KEYBOARDS

RF INPUT AND OUTPUT CIRCUITS AND RF COUNTER

See Fig. 1–2.

The RF IN/OUT BNC socket is connected to the input switching assembly AC0/2 where the input is sampled. The sample is passed to the overload/reverse power protection circuit on the motherboard AB1/1. If excessive power is detected, the input is isolated by a relay in AC0/2 so that the signal generator is protected.

No such protection is necessary for the RF IN/OUT N socket since it is directly connected to a 20 dB pad. Excessive power at this socket results in overheating which is sensed in AC0/2 causing the detector on AB1/1 to inform the microprocessor which flashes a warning notice on the screen.

Whenever there is excessive power to either socket, an audible warning is generated from the audio amplifier on AB1/1. This warning overrides the VOLUME control on the scope keyboard AF2/2.

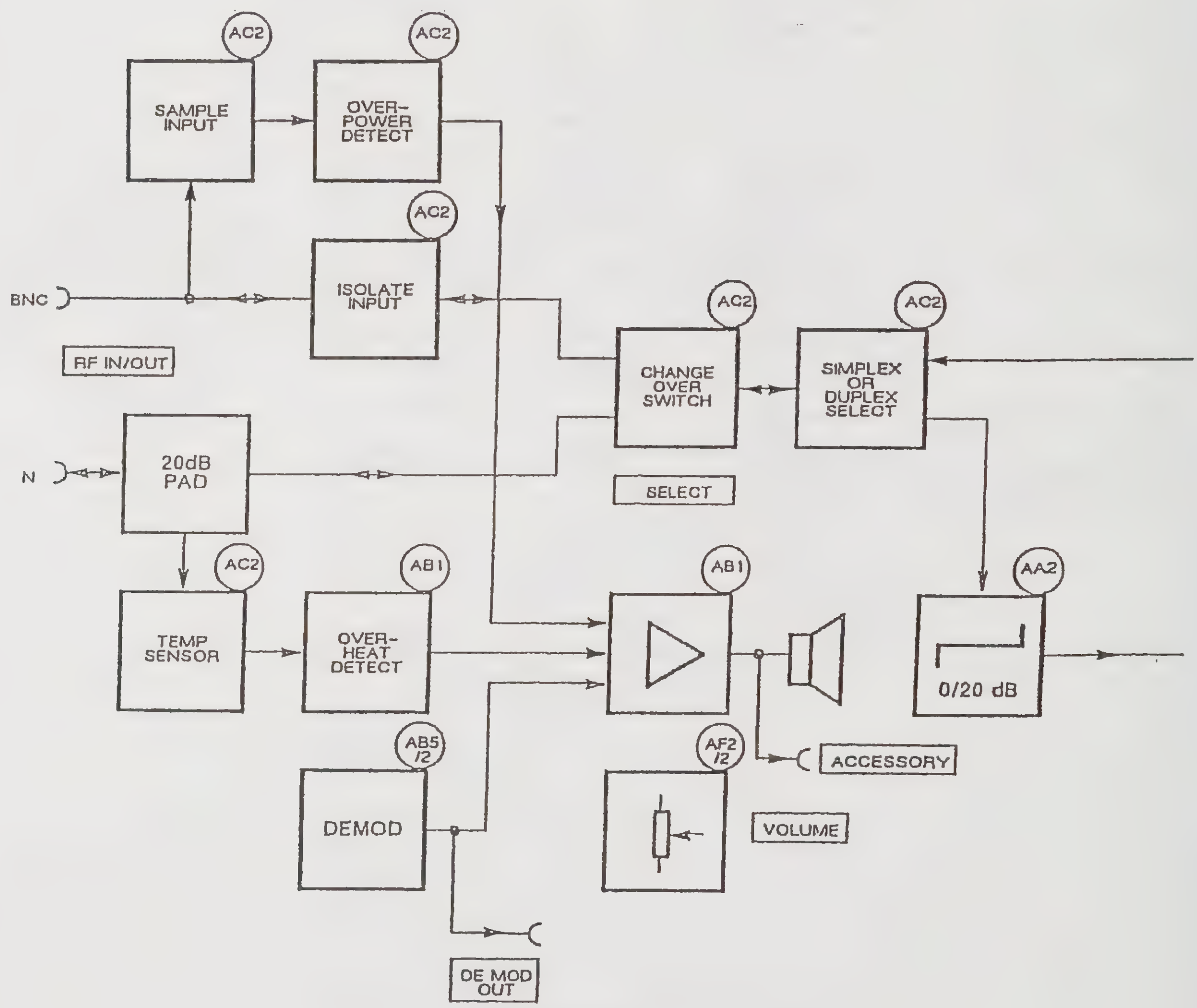
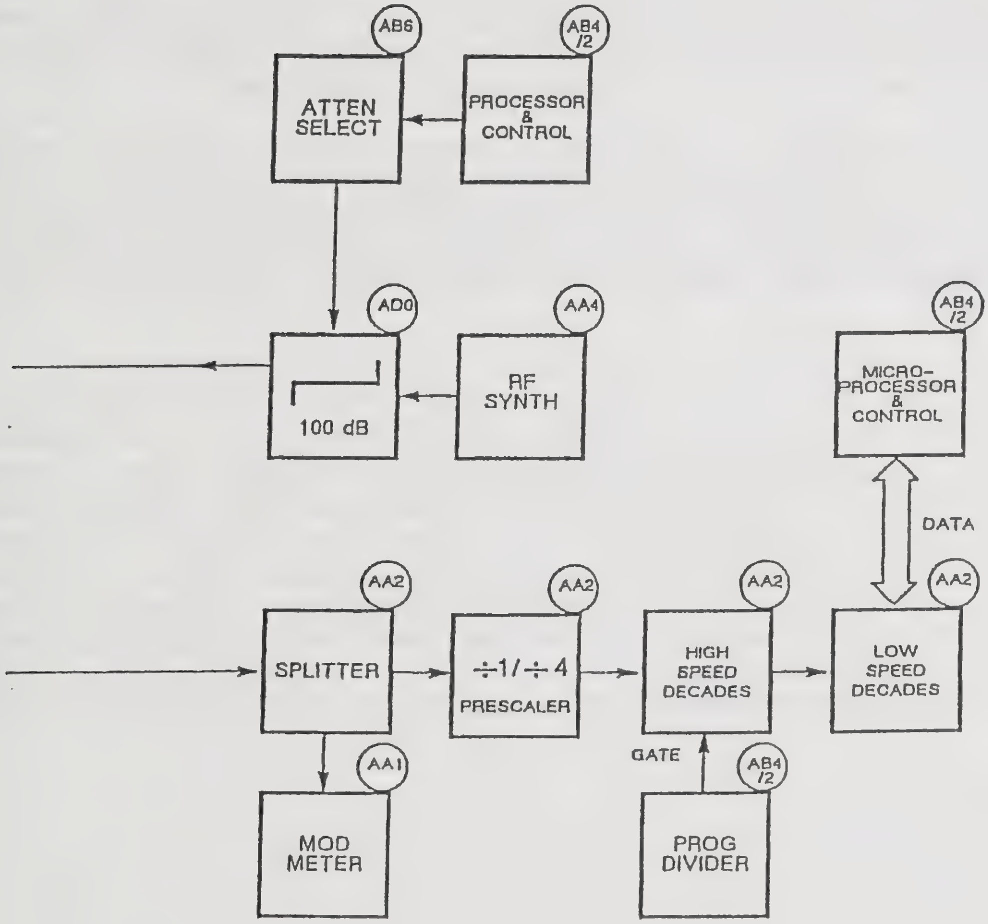


Fig. 1–2 Block diagram of RF input and output circuits and RF counter

The signal generator output signal is fed from the LF synthesizer and output amplifier board AA4/1 through the 0 to 100 dB attenuator assembly AD0 (except Option 1) or attenuator and switch assembly RX2 (Option 1 only) and then through AC0/2.

A changeover switch in AC0/2 responds to the SELECT key for simplex operation and defines the signal paths for one-port and two-port duplex operation.

The signal input is fed from a splitter on the RF counter board AA2 to the modulation meter on the modulation meter board AA1 and to the RF counter on AA2. The signal to the counter is fed through a 20 dB pad to a prescaler which is switched in for frequencies above 200 MHz. The counter is gated, depending upon frequency range, by a divider on the microprocessor board AB4/2. The resulting frequency measurement is fed on the data bus to AB4/2.



RF COUNTER BOARD AA2

See Fig. 7-9.

The RF counter is a standard gated counter which has a ÷4 prescaler switched in at frequencies above 200 MHz. Normally, resolution is to 10 Hz. Below 200 MHz, the gate time is 100 ms. Above 200 MHz, the gate time is increased to 400 ms to compensate for prescaler insertion. When 1 Hz resolution is selected for frequencies below 200 MHz, the gate time is commensurately increased from 100 ms to 1 s. When the frequency exceeds 200 MHz, the counter reverts to a 400 ms gate time and a 10 Hz resolution.

Prescaler switching and gate timing are controlled by the processor which notes the frequency, checks that there are three successive counts which are the same, and then sets up the counter chain accordingly.

20 dB pad

The input switching assembly AC0/2 is connected by the SIGNAL INPUT line to 20 dB 50 Ω pad R3, R4 and R5. This is switched in by the microprocessor when it detects that the power input has increased to a level where the sampling gate on the modulation meter board AA1 is approaching a non-linear condition.

The pad also attenuates the input to the counter and avoids overdriving the input amplifiers. It is switched by RLA whih is controlled by the 20 dB IN/OUT line to transistor TR1. When the line is taken low, TR1 is switched on and the pad is inserted in the signal path. The following 50 Ω splitter R6, R7 and R8 has a 6 dB loss in all directions and splits the input between the RF counter and the sampling gate on AA1.

Input amplifiers

Amplifiers IC1 and IC2 provide 10 dB per stage gain which restores the signal level which was lost in the splitter and matching circuit. IC1 and IC2 also provide an overall gain for the signal input to limiting amplifier and Schmitt trigger IC3. This has positive feedback from output pin 3 to input pin 10 to ensure Schmitt operation at low frequencies (below 100 MHz). This is necessary to drive the following dividers with the correct slew rate. At higher frequencies, sine wave operation is acceptable and the high gain is not required. Diode D6 across the amplifier input acts as a peak detector. The time constant of IC3 is capacitor C12 and resistor R13 in parallel with its internal impedance. This keeps the amplifier from self-biasing under high signal level conditions at high frequencies.

Prescaler and counters

From IC3, the signal is routed to ECL ÷10 BCD counter IC7 either directly or through ÷4 prescaler IC6. The routeing for this is switched by transistor TR2 which is driven from the ÷4/÷1 line at TTL level. For a low level signal, the prescaler is switched in. For a high level signal, the prescaler is bypassed through diodes D2 and D5.

IC7 has a gate facility on INH pin 16 and TTL compatible outputs. The gating signal of either 100 ms or 400 ms duration originates in a programmable counter on the microprocessor board AB4/2 and is applied on the GATE INPUT line to TR3. TR3 with gate IC8 shift the level from TTL to ECL. IC7 pins 2, 7, 8 and 10 are state lines. IC7 pin 11 is the carry (i.e. ÷10) output.

The output from IC7 pin 11 is inverted by transistor TR4 to ensure correct polarity for the following TTL ÷10 BCD counter IC5. IC5 pins 8, 9, 11 and 12 are the state lines. IC5 pin 12 is the ÷2 output to 7-elementt counter IC4. The signal at TP2 is thus either $f_{in} \div 80$ or $f_{in} \div 20$ depending on prescaler setting.

The state lines from both IC7 and IC5 are taken to IC4. This has internal registers which store all 7 of the internal BCD states plus those of the external counters IC7 and IC5. The resulting data is read when enabled by a low on the EN COUNTER line to pin 20.

When the internal registers are addressed by the microprocessor on pins 14 to 17, the data is read from the tri-state outputs on pins 1 to 4. The data bus is not exclusive to the counter but is shared with the synthesizer in the modulation meter. Overflow information is provided by an internal latch which, when addressed, makes available an overflow flag.

At the end of the counting period, a further address clears all the internal counters to zero and outputs a reset high pulse from pin 19. This resets the external counters IC5 and IC7.

MOTHERBOARD AB1/1

To provide interconnection between the various parts of the instrument, this assembly contains five 32-way 2-sided edge connectors which each hold a printed circuit board assembly AB2/2, AB3/2, AB4/2, AB5/2 and AB6/1. Additionally, this assembly contains the RF tray drivers, keyboard interface circuit, loudspeaker amplifier, DTMF decoder, DCS filter and part of the overpower and overheat protection circuits.

Audio amplifier

See Fig. 7-17.

Audio power amplifier IC13 supplies the internal loudspeaker and earphones or a loudspeaker which is externally connected to the ACCESSORY IN/OUT socket on the front panel. The gain of IC13, and hence the volume, is controlled by the channel resistance of FET TR7. The bias of TR7 is controlled by the VOLUME control which is mounted on the scope keyboard AF2/2. To avoid parasitic oscillations, IC13 is heavily decoupled and has a low-pass filter R29 and C11 at its output.

RF power overload circuits

See Fig. 7-17.

In the input switching assembly AC0/2, diodes D1, D2, D3 and D4 are connected to the OVERPOWER- and OVERPOWER+ lines. On AB1/1, these lines are connected to Schmitt trigger IC6b pins 5 and 6. To detect when excessive RF power (approximately 1.0 W) is applied to the RF IN/OUT BNC socket, the large differential voltage causes IC6b to take NAND gate IC5a pin 2 and IC5b pin 4 low.

When IC5a pin 2 is low, pin 3 is high which switches or holds off relay driver TR1. This takes the DX RELAY line low to AC0/2 which causes the input to be disconnected.

When IC5b pin 4 is low, pin 6 is high which informs the microprocessor that excessive power is being applied. Also, NAND gate IC5d overrides the VOLUME control for maximum audible warning.

In AC0/2, thermistor R1 is connected to the OVERHEAT line. On AB1/1, this line is connected to the non-inverting input of Schmitt trigger IC6a which gives a potential divider with R13. At normal temperatures, most of the voltage from the +5 V rail is dropped across R1 so that IC6a pin 3 is held high. When the thermistor detects that the 20 dB pad is overheating due to the application of excessive RF power to the RF IN/OUT N socket, the decreased resistance (12 kΩ at 100°C) is sufficient to trigger IC6a. This causes IC5b pin 5 to go low. When IC5b pin 5 is low, pin 6 is high as above for the BNC socket.

RF tray selection circuit

See Fig. 7-18.

Address decoder IC11 operates when its pin 4 is taken low. Address lines A0 to A2 are decoded to produce clock signals for positive-edge triggered bistables IC8, IC9, IC14 and IC15. IC11 also provides a low enable signal for data input buffer IC12. Data output buffer IC7 is enabled by the COUNTER EN line going high to latch IC9. Transistors TR2, TR3, TR4 and TR5 are open collector drivers for oscillator and filter selection on the RF synthesizer and oscillator board AA3.

Keyboard interface circuit

See Fig. 7-18.

This circuit consists of latch IC2, NAND gate IC3 and buffer IC4. It detects when a keypress is being made and enables the key to be identified. All of the COLUMNS inputs to IC4 are held high by pull-up resistor R1. These inputs are gated by IC3 whose output is thus normally low. From IC2, outputs on the ROWS lines are normally held low. When a key is pressed on the main keyboard AF1/2 or on the scope keyboard AF2/2, one of the ROWS lines is connected to one of the COLUMNS lines taking it low. The low is then detected by IC3 whose output goes high and causes a microprocessor interrupt. The microprocessor then reads the contents of IC4 to determine in which column the keypress is being made. To determine the row, the microprocessor sets the outputs of IC2 high in turn until the previously low line returns high. The output of IC2 causing this response then corresponds to the row in which the keypress is being made.

DTMF decoder

See Fig. 7-17.

DTMF decoder IC19 contains all necessary filters and frequency detectors. The input is the demodulated audio from the demodulation and scope board AB5/2. On receipt of a valid DTMF code, IC19 interrupts the microprocessor which in turn clocks the DTMF code onto the data bus. Crystal X1 is used as the frequency reference for the decoder. Capacitor C19 and resistor R39 determine the response time.

DCS filter

See Fig. 7-17.

This is a fourth-order low-pass filter which contains amplifiers IC20b and IC20a. The filter removes all noise and audio signals above 180 Hz from the received demodulated signal before it is fed to the DCS decoder on the microprocessor board AB4/2.

INPUT SWITCHING ASSEMBLY AC0/2

See Fig. 7-37.

This unit contains the following:-

(a) A dummy load and attenuator which dissipates the incoming RF power.

(b) A changeover system which connects either the RF IN/OUT BNC or N socket.

(c) A splitter which connects the N socket for full duplex one-port mode.

(d) Detectors for input overload conditions and a disconnection circuit which protects the RF generator.

20 dB power attenuator

This consists of 20 dB thin film, tantalum nitride on alumina, T-pad R4. It is fixed to a nickel-plated copper carrier. This in turn is bolted into a substantial milled box and then to the case metalwork. Thus, there is efficient cooling of the load and this is assisted by the air flow over the box by the fan.

Thermistor R1 is placed in a hole in the copper carrier to monitor the temperature. The connection to the motherboard AB1/1 is on the OVER TEMP line. The reduction in resistance at high temperature causes an audible warning and a notice to be flashed on the screen.

Switching circuit

Relay RLA is used as the BNC input overload disconnection relay. It is capable of breaking up to 100 W of RF power. RLA is also used to connect part of the duplex splitter pad. The remainder of the duplex splitter is connected by relay RLC.

The duplex splitter is a 6 dB pad R1, R2 and R3. This enables the signal generator and the receiver section to be connected to the RF IN/OUT N socket simultaneously. RLB performs a changeover action so that either of RF IN/OUT sockets is connected to the receiver section or to the signal generator. RLA, RLB and RLC are switched by +5 V (high) or 0 V (low) as follows:-

Function	RLA high/low	RLB high/low	RLC high/low	Connections high/low
Simplex	High	High	Low	BNC socket to receiver section, N socket to signal generator
Simplex or duplex two-port	High	Low	Low	BNC socket to signal generator, N socket to receiver section
Duplex one port	Low	High or low	High	BNC socket disconnected, N socket to signal generator and to receiver section

Overload detection circuit

The BNC socket is connected through 10:1 divider R4 and R5 to a detector bridge D1, D2, D3 and D4 which is followed by limiter D5. Above a threshold of 0.7 V, the differential voltage between the bridge outputs is sufficient to cause the motherboard AB1/1 to generate the warning and to remove the drive on the DUPLEX-ISOLATE (L) line to RLA. Thus, RLA disconnects the BNC connector from the signal generator and the receiver section.

RF AND LF SYNTHESIZERS

See Fig. 1–3.

On the RF synthesizer and oscillator board AA3, there are three switched oscillators which provide a basic frequency range of 165 to 530 MHz. From these, all other signal generator frequencies are derived. Band defining filters select either the harmonic or fundamental frequencies and extend the range from 165 to 1000 MHz. Oscillator output is also taken to a prescaler and programmable divider for frequency setting and then to a control IC for phase locking purposes.

The control signal and frequency modulation are fed back to the oscillators from the AF synthesizer board AB6/1.

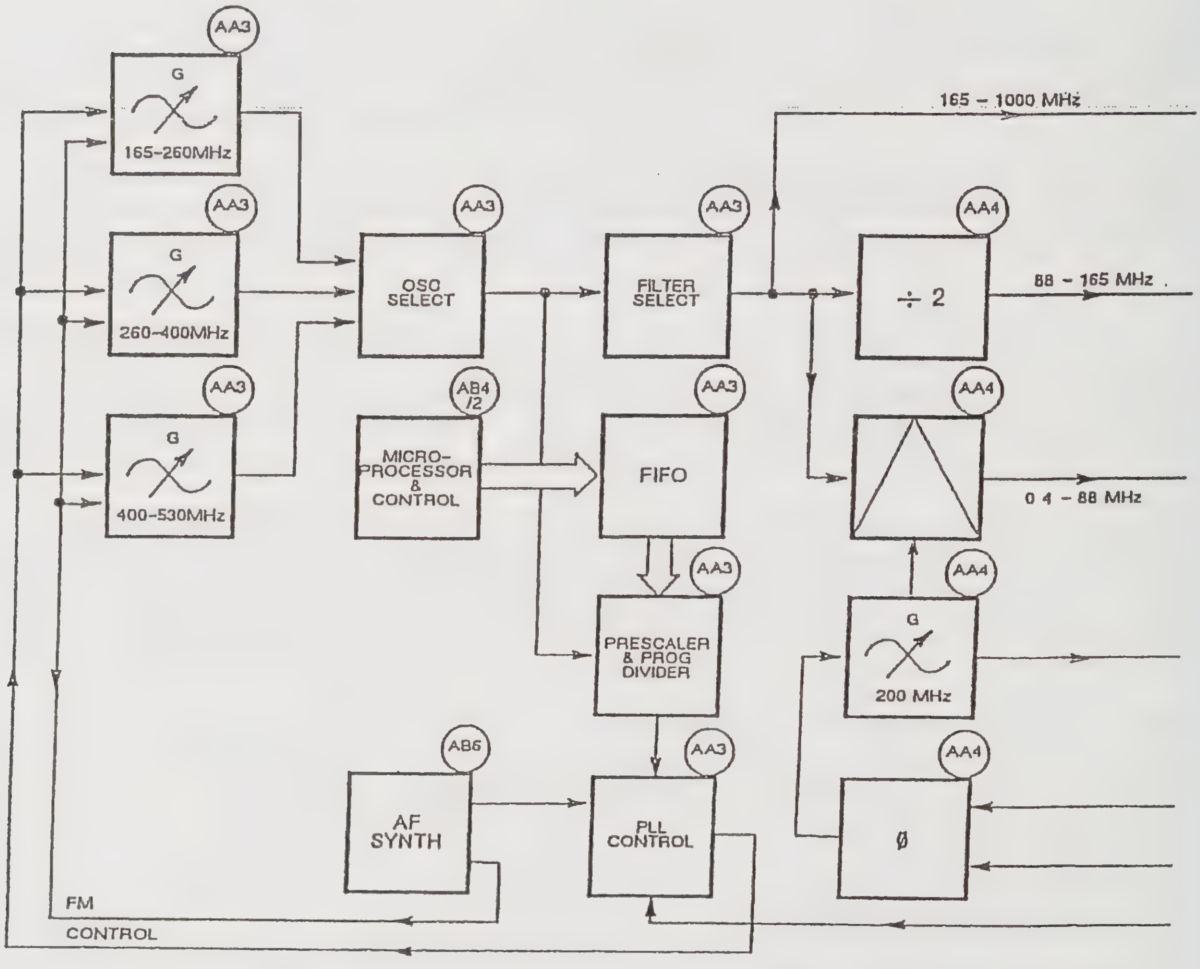
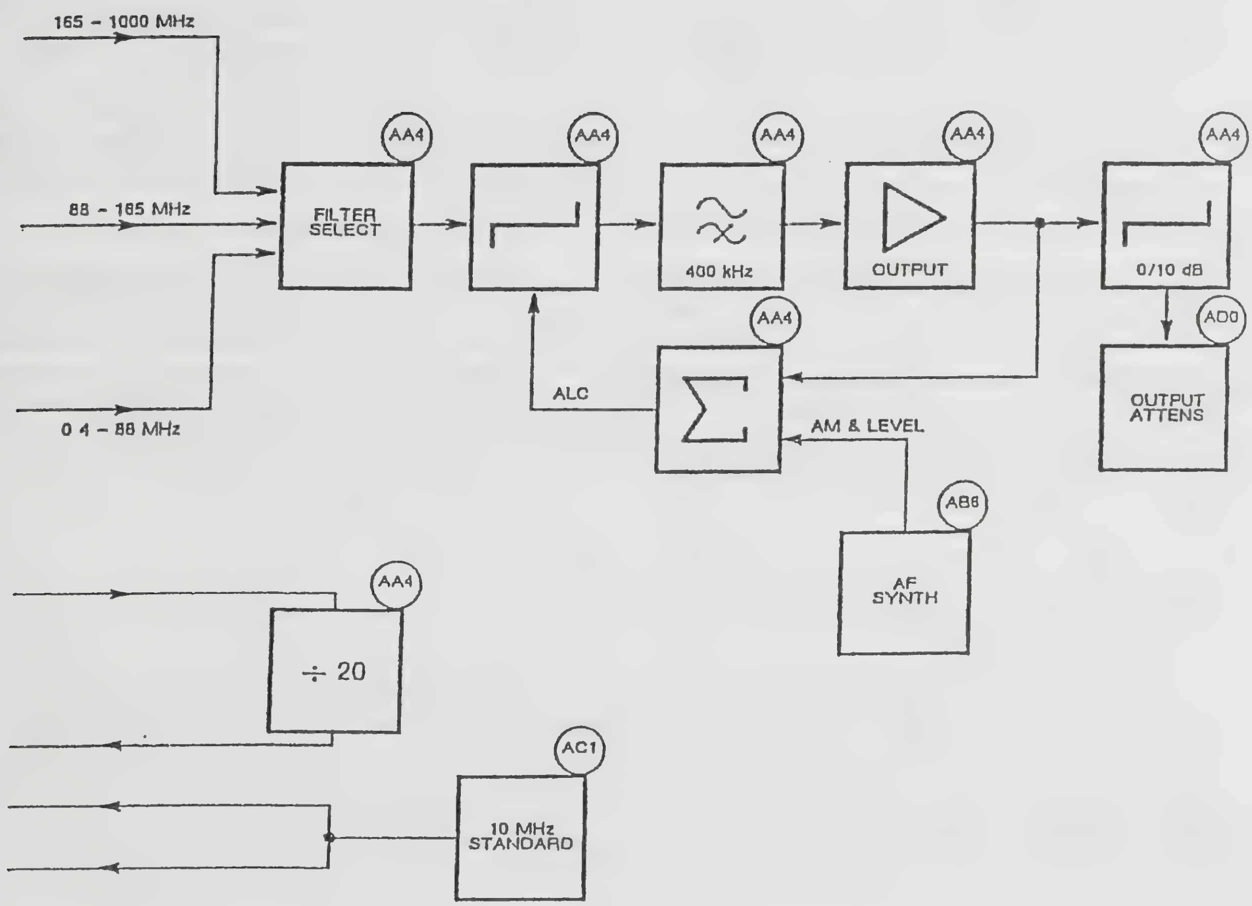


Fig. 1–3 Block diagram of RF and LF synthesizers

On the LF synthesizer and output amplifier board AA4/1, there is a divider to extend the range from 165 to 88 MHz and a mixer to reach from 88 to 0.4 MHz. The mixer reference is supplied by a 200 MHz oscillator. Switched band-pass filters pass the selected frequency through an attenuator controlled by ALC to a 400 kHz high-pass filter. A proportion of the signal from the output amplifier is fed back on the ALC loop together with amplitude modulation and level control signals from AB6/1. A switched 10 dB attenuator passes the signal on to the 100 dB output attenuator.

The RF oscillator and the 200 MHz oscillator are phase locked to the 10 MHz standard from the CRT drive board AC1.



RF SYNTHESIZER AND OSCILLATOR BOARD AA3

This assembly contains the switched oscillators and filters which are used for frequency selection in the range 165 to 1000 MHz. It also contains the dividers and phase comparators which enable the selected frequency to be phase locked to the 10 MHz frequency standard.

Oscillators

See Fig. 7-11.

There are three oscillators TR1, TR5 and TR12. They are configured as Colpitts oscillators using split capacitors for feedback and have printed inductors. The oscillator frequency ranges are 165 to 260 MHz (oscillator 1), 260 to 400 MHz (oscillator 2) and 400 to 530 MHz (oscillator 3). Only one oscillator is operational at a time, the power being supplied through their emitter resistors and switches TR2, TR6 and TR13 as required. When either of the OSC CONTROL lines is low, TR2 or TR6 are switched off to disconnect the −9 V supply. When either oscillator 1 or 2 is working (i.e. TR2 or TR6 is switched on), oscillator 3 is disabled by diodes D3 or D10 which switch off TR13.

Frequency modulation of the oscillators is provided by the FREQ MOD INPUT line. To cope with the FM tracking of the oscillators, the signal is preset in amplitude on the AF synthesizer board AB6/1 and is then fed through attenuator networks R1 and R2 for TR1, R15 and R16 for TR5 and R46 and R47 for TR12.

Error voltages from loop amplifier IC107 (on Fig. 7-7) are applied through resistor R3 to varactor diodes D1 and D2 (oscillator 1), D4 (oscillator 2) and D22 (oscillator 3). The oscillators are run hard to obtain the required second and third harmonics. To select the required output frequency, the oscillator outputs are fed to a network of switched low-pass and high-pass filters. For phase locking purposes, an output is taken through an attenuator from the emitter of each oscillator to amplifier IC1. The output from IC1 feeds to programmable dividers (on Fig. 7-7).

Oscillator and filter selection circuits

See Fig. 7-11.

Oscillator and filter selection lines OSC CONTROL and FILTER CONTROL are connected to four open collector pnp transistors (driven from TTL) on the motherboard AB1/1. For the switching logic level which corresponds to the user-selected frequency, see Table 1-1. The frequencies from 165 to 1000 MHz are generated on this board but the remaining frequencies, those from 0.4 to 165 MHz, are generated on the LF synthesizer and output amplifier board AA4/1.

TABLE 1-1 OSCILLATOR AND FILTER SELECTION

Selected frequency MHz	OSC CONTROL line PLA4	PLA5	Selected oscillator MHz	FILTER CONTROL line PLA6	PLA7
0.4 to 60	High	Low	165 to 260	Low	Low
60 to 88	Low	High	260 to 400	Low	Low
88 to 130	High	Low	165 to 260	Low	Low
130 to 165	Low	High	260 to 400	Low	Low
165 to 260	High	Low	165 to 260	Low	Low
260 to 400	Low	High	260 to 400	Low	Low
400 to 530	Low	Low	400 to 530	Low	Low
530 to 630	Low	High	260 to 400	High	High
630 to 800	Low	High	260 to 400	Low	High
800 to 1000	Low	Low	400 to 530	Low	High

Filters

See Fig. 7-11.

The FILTER CONTROL lines operate transistor switches TR3, TR4, TR7, TR8, TR9 and TR22 which control switching diodes D5 to D9, D11 to D21 and D24 to D30 which define the signal paths through the filters. The selected path depends on which oscillator is switched on. For a summary of filter selection, see Table 1-2 for transistor switching and Table 1-3 for diode switching.

For 165 to 530 MHz, both FILTER CONTROL lines are low so that TR3 and TR7 are off. This allows pull-up resistor R23 to switch on TR4 which connects the 410 MHz LP filter to oscillator 2. TR4 also switches on D8 and D9 which respectively switch off TR8 and TR9. With TR9 off, pull-up resistor R78 switches on TR11 which connects the 560 MHz LP filter to oscillator 3. The 265 MHz LP filter is permanently connected to oscillator 1. The filters select the oscillators' fundamental frequencies for output.

For 530 to 630 MHz, both FILTER CONTROL lines are high so that TR3 and TR7 are on. TR3 switches on D11 which connects the 520 MHz HP filter. TR7 switches on D14 and D15 which connect the 630 MHz LP filter. Oscillator 2 is switched on and the filters select the second harmonic for output.

For 630 to 1000 MHz, both FILTER CONTROL line PLA6 is low and PLA7 is high. TR3 is switched on which connects the 520 MHz HP filter to oscillator 2. TR7 is switched off which allows TR8 to switch on which connects the 820 MHz LP filter to the same oscillator. TR9 switches on which connects the 800 MHz HP filter to oscillator 3 while also switching TR11 off. This allows pull-up resistor R63 to switch on D17 which connects a tuning stub to cut down sub-harmonics in the 800 to 1000 MHz range. The filters select the second harmonic outputs from both oscillators.

The output from the filters is fed to the LF synthesizer and output amplifier board AA4/1 through 18 dB gain amplifier IC4.

TABLE 1-2 FILTER SELECTION TRANSISTOR SWITCHING

Output frequency	FILTER CONTROL lines PLA6	PLA7	Transistor switches TR3	TR4	TR7	TR8	TR9	TR11	Filters connected
165 to 530 MHz	Low	Low	Off	On	Off	Off	Off	On	265 MHz LP 410 MHz LP 560 MHz LP
530 to 630 MHz	High	High	On	Off	On	Off	On	Off	265 MHz LP 630 MHz LP 520 MHz HP 800 MHz HP
630 to 1000 MHz	Low	High	On	Off	Off	On	Off	Off	265 MHz LP 820 MHz LP 520 MHz HP 800 MHz HP

TABLE 1-3 FILTER SELECTION DIODE SWITCHING

FILTER CONTROL lines PLA6	PLA7	Diode switches D5	D6	D7	D8	D9	D11	D12	D13	D14	D15	D16	D17
Low	Low	Off	On	On	On	On	Off	Off	On	Off	Off	Off	Off
High	High	On	Off	Off	Off	Off	On	On	Off	On	On	On	On
Low	High	On	Off	Off	Off	Off	On	Off	On	Off	Off	Off	On

FILTER CONTROL lines PLA6	PLA7	Diode switches D18	D19	D20	D21	D24	D25	D26	D27	D28	D29	D30
Low	Low	Off	On	On	Off	Off	On	On	Off	Off	On	On
High	High	Off	On	Off	Off	On	Off	Off	On	On	Off	Off
Low	High	On	Off	Off	On	On	Off	Off	On	On	Off	Off

Regulators

See Fig. 7–12.

The oscillators and the CMOS sections of the divider chain have their own ±9 V regulators IC2 and IC3. These remove any modulation which may have been introduced on the ±12 V supply lines.

Divider chain

See Fig. 7–12.

ECL ÷10/11 IC108 and IC112 enable the divider chain to function over a 165 to 530 MHz range no matter what frequency is selected. ECL interfacing dual master/slave bistable IC111 gives adequate switching times for driving divider sidestep (increasing the division ratio by 1). It also retimes the sidestepping instruction from master programmable divider IC104. Transistors TR102, TR103 and TR105 provide a CMOS to ECL level shift from IC104 to the ECL ICs. TR104 provides a level shift from ECL to CMOS. Diode D111 provides a clamp to avoid hole storage problems.

Programmable dividers IC104 and IC101 form a master and slave relationship with IC104 being the master and IC101 being the slave. IC104 also provides all the timing pulses for prescalers IC108 and IC112. The dividers are programmed by means of data which is fed to inputs A0, A1, A2 and A3 where it is automatically scanned and loaded into the correct internal latches. Additional programming data is fed to inputs B0, B1, B2 and B3. The timing pulses for data input are fed to the dividers' PC (Program Clock) inputs by synthesizer IC106.

Programming is controlled by the PE (Programme Enable). The input for division to each division to each divider is IN, from the prescalers to the master and from the master's output OFS to the slave. Outputs OFB1 and OFB2 from the master carry feedback signals to the prescalers, OFB1 to IC112 which has the highest frequency and OFB2 to IC108. Master output OSY provides a synchronizing signal for the feedback. Slave output OFB3 is connected back to the master on input SI to provide the borrow. Output OFB1 to input RI is the connection which is necessary for the master and slave configuration. The two outputs for phase locking are OFF from the master and OFS from the slave, both of which go to IC106.

The FIFO (First In–First Out) memories IC102 and IC105 are the buffers between the microprocessor commands and the divider loading sequence. The programming data on D0 to D3 lines is clocked into the FIFOs in the order IC105 then IC102 by SHIFT IN from the microprocessor, after which the data ripples through the FIFOs on its own (with no clock). Then, an enable pulse on the PROGRAM ENABLE line is sent to the inputs PE of the dividers. Clock pulses from IC106 provide the SHIFT OUT signal for the FIFOs in addition to being used on the PC inputs to synchronously clock the data into the correct internal registers.

There are seven clock periods D0 to D6. For a typical data input sequence, see Table 1–4. In order to set certain internal division ratios, the data to IC104 during periods D0 to D6 is fixed. In order to set the internal registers of the slave as required, the data to IC101 during periods D2 to D6 is also fixed. At initialization, an extra set of data is required to ensure correct data during the period D6.

During periods D0 to D6, the appropriate outputs D0 to D6 from IC104 and IC101 are each taken low in turn. Output D6 on IC104 and outputs D2 and D6 on IC101 are connected through diodes D101 to D108 to the divider's inputs B0 to B3. These inputs are normally held high by pull-up resistors. They are selectively pulled low during the appropriate periods D2 and D6 to provide additional programming.

Two outputs from the dividers are used to phase lock the loop, both of which go to controller IC106. The 5 kHz fast output signal from the master's output OFF, which has jitter, is connected to IC106 by the FAST PHASE LOCK line. This allows fast frequency locking. The 50 Hz slow output signal from the slave's output OFS is jitter-free and is connected to IC106 by the SLOW PHASE LOCK line. This is used for fine phase control at a slower speed. These outputs consist of a train of negative-going pulses.

TABLE 1-4 TYPICAL DATA INPUT TO PROGRAMMABLE DIVIDERS

Period	IC101 (Slave)				IC104 (Master)			
	A3	A2	A1	A0	A3	A2	A1	A0
INIT	Low	High	Low	High	High	High	High	Low
D0	Data	Data	Data	Data	High	High	High	High
D1	Data	Data	Data	Data	Data	Data	Data	Data
D2	Low	High	Low	Low	Data	Data	Data	Data
D3	High	High	High	High	Data	Data	Data	Data
D4	High	High	High	High	Data	Data	Data	Data
D5	High	High	High	High	Data	Data	Data	Data
D6	Low	High	Low	High	High	High	High	Low

Synthesizer

See Fig. 7-12.

The synthesizer IC106 phase, contains the frequency standard divider, a two-phase analogue comparator, a two-phase digital comparator and a modulator.

The reference divider consists of a reference oscillator, a prescaler and a binary divider. The input IN to the reference oscillator is the 10 MHz INPUT line from the frequency standard. The prescaler is programmed to divide by 20 due to inputs D0 to D1 being held high by pull-up resistor R115. Inputs A2 and A4 are similarly held high so as to program the binary divider to divide by 20. Other inputs are held low by being connected to earth. Total division is thus 2000 which converts the 10 MHz input to the 5 kHz at output OUT. This supplies the clock for the programmable dividers. Also, output OUT is fed back to input R to provide the internal reference for the phase comparators.

The two phase comparators operate at 5 kHz from input FAST PHASE LOCK and 50 Hz from input SLOW PHASE LOCK. This allows a fast lock using the 5 kHz phase comparator and a narrowband lock using the 50 Hz comparator.

The slow phase comparator is built around a sample and hold circuit. A negative-going transition at the input causes capacitor C104 to be discharged after which a positive-going ramp is produced. A negative-going transition from clock OUT to the dividers at input R terminates the ramp. C104 holds the voltage which the ramp has attained. An internal sampling switch transfers the voltage to capacitor C103 after which the voltage is available at output PC1.

The fast phase comparator produces positive-going or negative-going pulses with variable width depending on the phase relationship between inputs V and R. Output PC2 is a linear function of the phase difference. The fast phase comparator is disabled when the slow comparator approaches lock. An out of lock indication is provided by LED D106 which is driven by transistor TR101 from output D/L. The gain of the slow phase comparator is much higher than that of the fast comparator and the loop bandwidth is much narrower. This is reflected in the large difference in value between resistors R114 and R113.

Frequency modulation of the synthesizer follows two paths. The first path is straight modulation of the oscillator varactor diodes as above. The second path is to extend the low frequency modulation response using the phase modulation capability of IC106. On the AF synthesizer board AB6/1, the modulating signal is preset to an amplitude of 1/N where N is the division ratio of the dividers. It is picked off before the FM/AM tracking DAC. The LF FREQ MOD INPUT is integrated in amplifier IC109 and the gain of the two paths is equalized by adjusting R138 to givs a flat FM response down to 1 Hz. The integrated signal is then fed to IC106 phase comparator input MOD. This uses external capacitor C105 which is connected to input TCB. A negative transition at input V causes C105 to produce a positive-going linear ramp. When the ramp reaches a value almost equal to the MOD input voltage, the ramp terminates, C105 discharges and a start signal to the ramp at C104 is produced. In this way a linear phase modulation is produced.

Loop amplifier

See Fig. 7-12.

Amplifier IC107 forms the main loop with capacitors C109, C111, R125 and C113 and resistor R114 for the time constants together with R3 and C5 (on Fig. 7-6). The IC106 phase comparator outputs PC1 and PC2 are summed together by IC107 and compared with 4.5 V provided by the potential divider formed by R119 and R117. From the IC107 output, the control voltage passes through connector PLD to the oscillator varactors (on Fig. 7-6).

LF SYNTHESIZER AND OUTPUT AMPLIFIER BOARD AA4/1

The primary function of this board is to convert the 165 to 400 MHz input from the RF synthesizer and oscillator board AA3 to produce the range of frequencies from 0.4 to 165 MHz. The board also provides part of the level control system.

There are three paths for the input as follows:-

(a) Through a 1000 MHz LP filter for 165 to 1000 MHz.

(b) Through a ÷2 stage and 165 MHz LP filter for 88 to 165 MHz.

(c) Through a mixer with its 200 MHz fixed LO and a 90 MHz LP filter for 0.4 to 88 MHz.

For a summary of frequency selection switching on this board, see Table 1-5.

165 to 1000 MHz path

See Fig. 7-14.

Switching diodes D3 and D4 are turned on through R6 by transistor TR2. TR2 is switched on by a low level on the LF RANGE 1 line from the motherboard AB1/1. When TR2 switches on, it also applies a high level to transistors TR1 and TR3 which then switch off. TR1, through resistors R27 and R29, causes the outputs from the 90 MHz and 165 MHz LP filters to be blocked by diodes D12, D14 and D15. With TR3 switched off, divider IC2 is disabled.

Transistor TR8 is switched off and thus the 200 MHz oscillator is disabled by a low level on the LF RANGE 2 line from the motherboard AB1/1.

88 to 165 MHz path

See Fig. 7-14.

The LF RANGE 1 line is taken high which switches off TR2. The LF RANGE 2 line is taken low which reverse-biases D3 and D4 and forward biases clamp diodes D1 and D2. This disables the signal path through the 1000 MHz LP filter. TR1 switches on diodes D5 and D6 which direct the signal to amplifier IC1. This provides 600 mV RMS at its output pin 5. TR3 switches on and enables IC2 to provide a ÷2 signal, rich in harmonics, to the following LP filter.

The IC2 output is an ECL compatible 1 V p-p square wave. When TR1 switches on, it also switches on D12 and switches off D14 while D15 is held off by TR3. TR8 is held off and the 200 MHz oscillator is disabled as above. The output level from the 165 MHz low-pass filter is −15 dBm.

0.4 to 88 MHz path

See Fig. 7-14.

Both LF RANGE lines are high which switches off TR2 and TR3 and switches on TR8. Also, TR1 switches on through R6 so that D12 is on and D14 is off. IC2 is disabled and D15 is switched on by TR3. Thus, the signal path is through IC1 to mixer IC6 pin 7. With the LF RANGE 2 line high, transistors TR8 and TR6 switch on to supply power to 200 MHz oscillator TR5. The output from TR5 is fed to IC6 pin 2. The input levels to IC6 are +6 dBm into pin 7 and -13 dBm to pin 1.

The variable frequency input acts as the local oscillator and the 200 MHz fixed oscillator input acts as the level determining signal. Thus, the output is unaffected by any variation in local oscillator drive. The frequencies at IC6 pin 7 are 200.4 to 288 MHz so that the selected difference frequency of 0.4 to 88 MHz provides the output from the filter.

TABLE 1-5 SUMMARY OF FREQUENCY SELECTION SWITCHING

Frequency path	PLB contacts		Transistor switches				Diode switches									
MHz	4	5	TR1	TR2	TR3	TR8	D1	D2	D3	D4	D5	D6	D12	D13	D14	D15
165 to 1000	Low	Low	Off	On	Off	Off	Off	Off	On	On	Off	Off	Off	On	On	Off
88 to 165	High	Low	On	Off	On	Off	On	On	Off	Off	On	On	On	On	Off	Off
0.4 to 88	High	High	On	Off	Off	On	On	On	Off	Off	On	On	On	Off	Off	On

Synthesizer summary

For a summary of the methods of frequency generation on both boards AA3 and AA4/1, see Table 1-6 and Fig. 1-4.

TABLE 1-6 SUMMARY OF FREQUENCY GENERATION CIRCUITS

Range	Board AA3		Board AA4/1		
	Oscillator	Filters	200 MHz oscillator	÷2 stage	Filter
MHz	MHz	MHz			MHz
0.4 to 60	165 to 260	265 LP	On	Off	90 LP
60 to 88	260 to 400	265 LP	On	Off	90 LP
88 to 130	165 to 260	265 LP	Off	On	165 LP
130 to 165	260 to 400	410 LP	Off	On	165 LP
165 to 260	165 to 260	265 LP	Off	Off	1000 LP
260 to 400	260 to 400	410 LP	Off	Off	1000 LP
400 to 530	400 to 530	560 LP	Off	Off	1000 LP
530 to 630	260 to 400	520 HP & 630 LP	Off	Off	1000 LP
630 to 800	260 to 400	520 HP & 820 LP	Off	Off	1000 LP
800 to 1000	400 to 530	800 HP	Off	Off	1000 LP

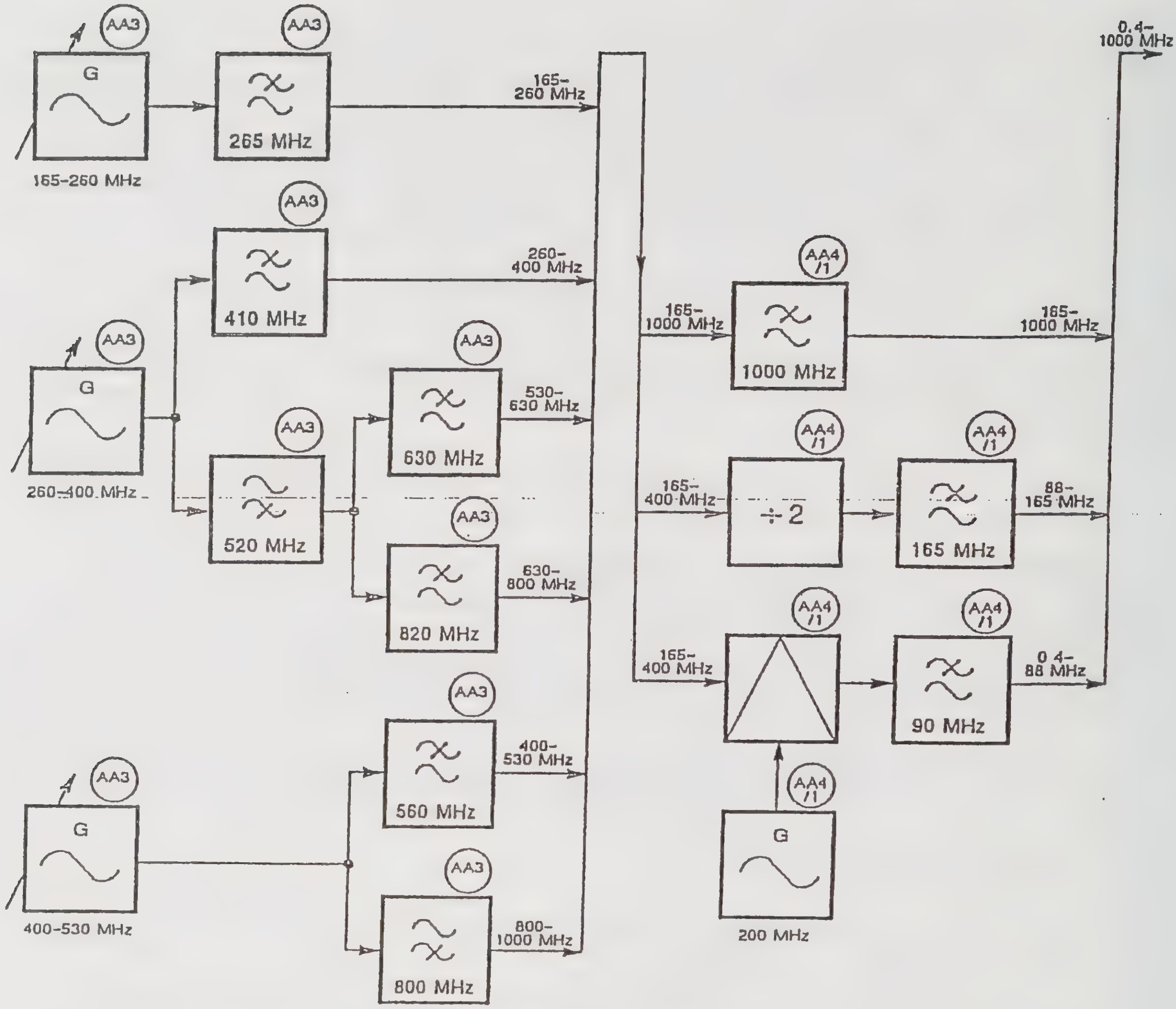


Fig. 1–4 Block diagram of RF generators and filters

200 MHz oscillator

See Fig. 7–14.

This is a modified Colpitts type which is similar to those on the RF synthesizer and oscillator board AA3. The frequency is determined by inductor L18, capacitors C73, C74, C75 and C79 and varactor diode D19. Preset capacitor C79 is used to set the frequency of the oscillator when it is unlocked. This is to ensure locking over the whole temperature range of the instrument. The oscillator is switched on by a high level on the LF RANGE 2 line.

The output from the oscillator is taken from the emitter of TR5 to obtain the best harmonics. The output is then fed through the filter network R48, R59, L17 and C65 to make the harmonics >35 dB down. Transistor TR4 is used as an impedance translator to avoid loading the filter network. Resistors R35, R36 and R37 improve the matching of the mixer port while C54 and C57 prevent very high order mixer signals from feeding back to the oscillator.

Divider and phase comparator

See Fig. 7–14.

The signal from the oscillator to the phase locking loop is taken from the collector of TR5 to divider IC10 pin 8 (ECL in, TTL out). The output is then fed through exclusive-OR gate IC9a, to improve the edge speed, and then to bsistable IC11b. This is configured to divide by two and produces a square wave signal to phase comparator IC9c pin 9. The comparison signal is the internal 10 MHz standard divided by two in IC11a. The two signals are compared and the resultant is passed through the loop filter R47, R62, C77, R64, C83, C84 and C85 to varactor diode D19. The capture range of the loop is ±0.7 MHz and the hold-in range is ±5 MHz.

Attenuator and ALC loop

See Fig. 7–15.

The attenuator consists of pin diodes D7, D8, D9 and D11. This provides the electronic RF attenuation for the fine attenuator, amplitude modulation and RF output levelling functions. Input level to the diodes is –15 dBm. Control voltages for the pin diode attenuator are provided on the AM AND LEVEL INPUT line by a level correction DAC on the AF synthesizer board AB6/1. The control voltages consist of a set RF level DC voltage plus audio modulation. This signal is fed to through attenuator R22 and R23 to comparator IC3 where it is compared with a DC or a DC plus a low frequency AC signal which is proportional to the peak RF output level. The output voltage from IC3 controls the pin diode attenuator through R8. Link PLC is provided to enable the loop to be broken so that a DC voltage can be inserted to check the control range of the attenuator.

The feedback path from the RF output amplifier is through R44 to detector diode D17. This is connected to unity gain amplifier IC7 which has detector diode D16, matched with D17, in its feedback loop. This corrects for temperature drift and provides an impedance transfer (high in, low out). Capacitor C50 and resistors R30 and R39 provide loop time constants to ensure stability.

Output amplifier and attenuators

See Fig. 7-15.

After the diode attenuator, a 400 kHz high-pass filter ensures that, for 250 kHz and below, the RF amplifier gain is reduced below unity. This is to prevent oscillations due to feedback around the ALC loop. The HP filter is followed by amplifiers IC4 and IC5 which are thick film hybrids with a frequency response of 200 kHz to 1000 MHz and each giving 12 dB of gain. Output amplifier IC8 is similar to IC4 and IC5 but with 28 dB gain and a higher power output capability. Because the ALC loop reduces the output impedance to approximately 1 Ω, a 50 Ω resistor R46 is provided to give the correct output impedance.

The output from IC8 is fed to a 10 dB pad R54 to R56. These are non-inductive metal film resistors to ensure adequate frequency response. Relay RLA is an RF relay which is switched by the 0/10 dB line from the motherboard AB1/1. The TTL level of the 0/10 dB line is converted to the relay level by transistor TR7. A low level switches in the attenuator.

The output signal is taken on the 0.4 to 1000 MHz line to the attenuator assembly AD0 (except Option 1) or attenuator and switching unit RX2 (Option 1 only).

Attenuator assembly AD0 contains three stages of 20, 40 and 40 dB to give a total attenuation of 0 to 100 dB by increments of 20 dB. Relays are switched by drivers on the AF synthesizer board AB6/1. The output is fed to the input switching assembly AC0/2.

AF SYNTHESIZERS AND MODULATION CONTROL CIRCUITS

See Fig. 1–5.

The AF synthesizer board AB6/1 generates two independent frequencies in the range 10 Hz to 20 kHz. Each generator is based on a custom–designed gate array which is configured as a bit rate multiplier whose output is an 8–bit address which is fed to a PROM look–up table. The PROM contains data which, when it is fed through a DAC, represents a stepped approximation to the required waveform. This is then fed through a filter to remove high order harmonics.

The output from the filter supplies the reference for a multiplying DAC which is used for signal level control. The outputs from both generators are combined and fed through a power amplifier to the AF GEN OUTPUT socket.

The AF synthesizer board AB6/1 also carries a dedicated square wave generator for digital signalling.

The outputs from both generators are also routed to the modulation control circuits together with the output of the low frequency square wave generator. A combination of DACs and switched gain amplifiers provides the necessary FM and AM level controls to the RF synthesizer and oscillator board AA3 and the LF synthesizer and output amplifier board AA4/1.

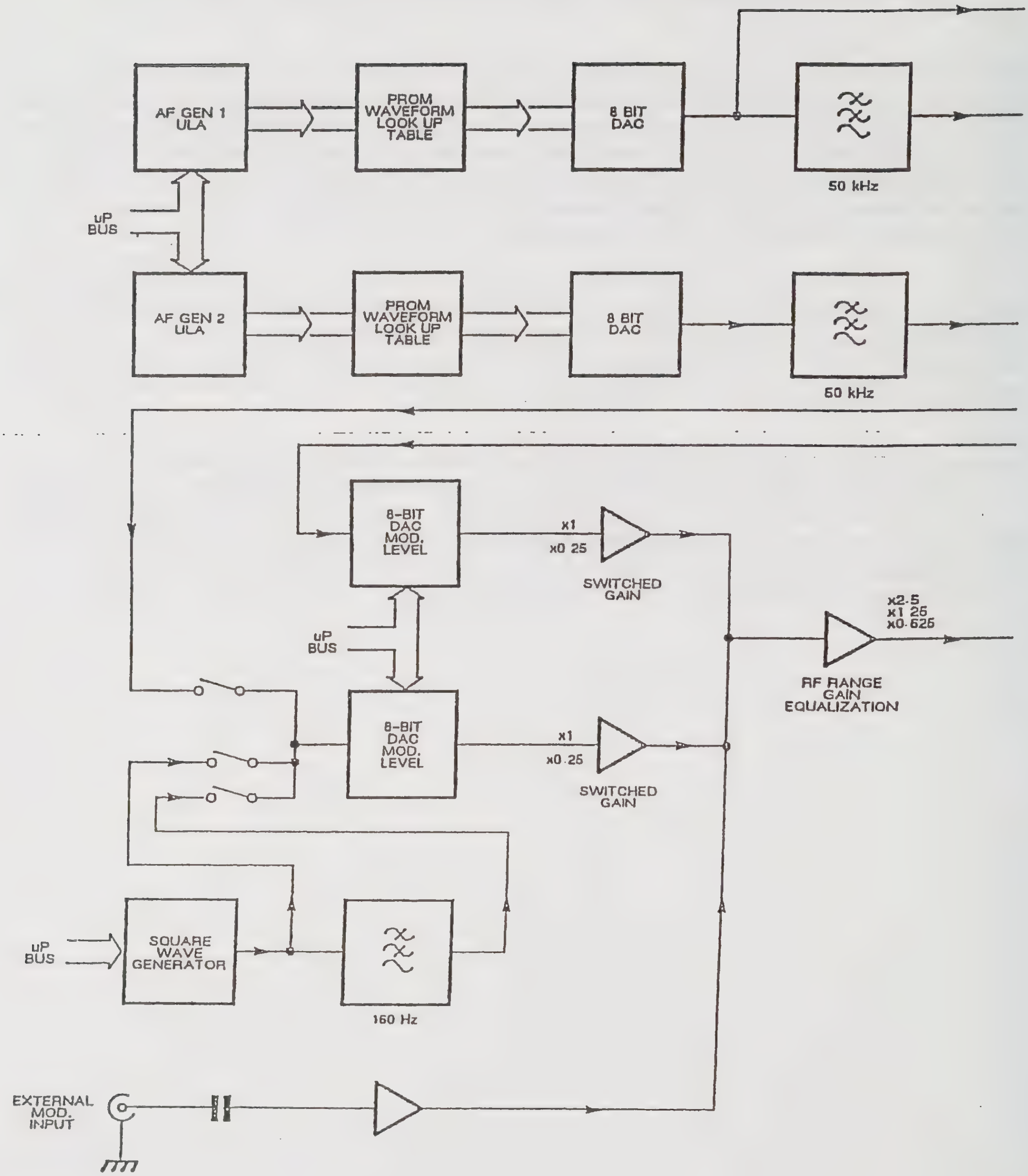
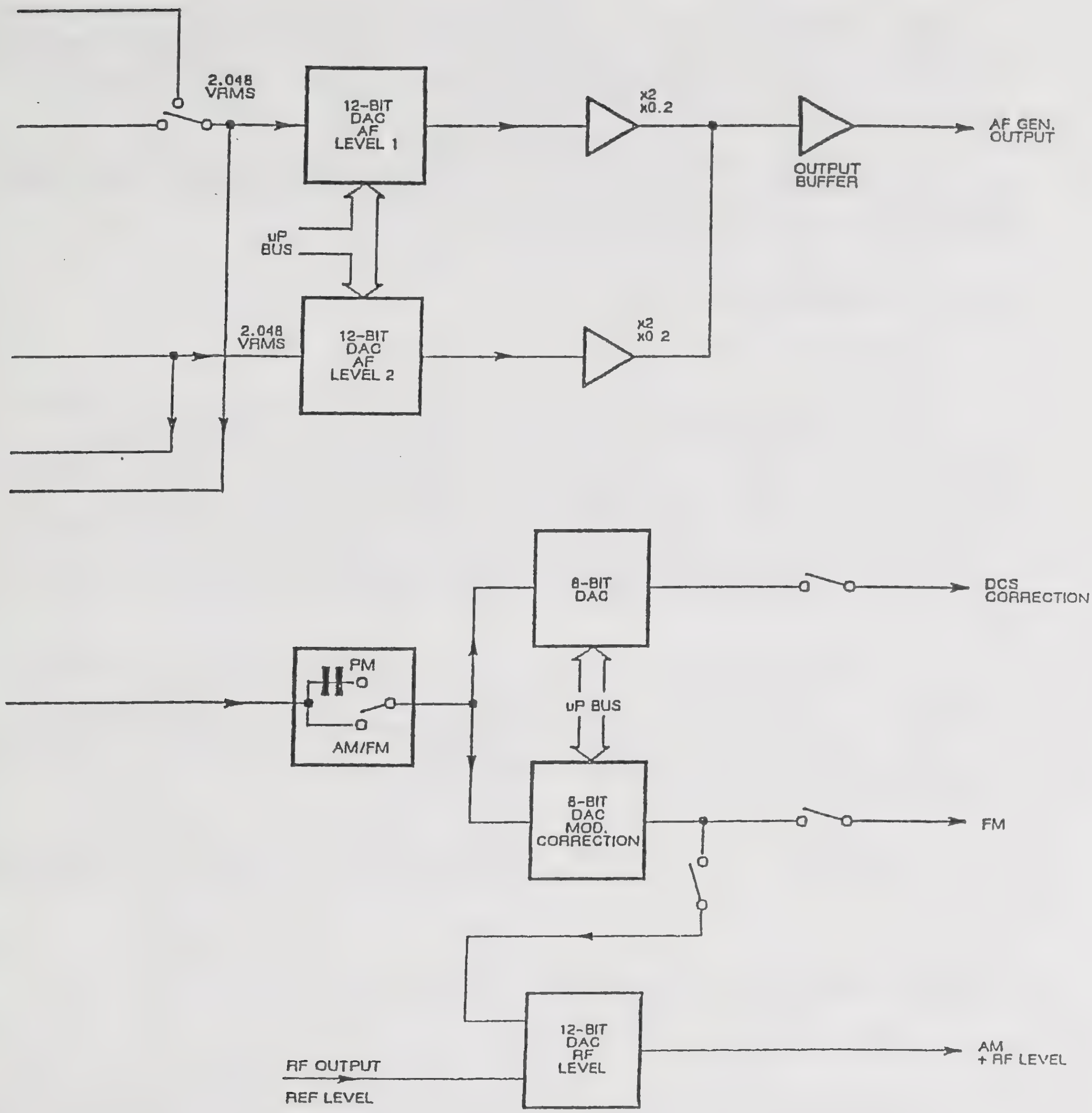


Fig. 1–5 Block diagram of AF synthesizer and modulation control circuits


2.048
VRMS
12-BIT
DAC
AF
LEVEL 1
x2
x0.2
AF GEN.
OUTPUT
OUTPUT
BUFFER
uP
BUS
2.048
VRMS
12-BIT
DAC
AF
LEVEL 2
x2
x0 2
8-BIT
DAC
DCS
CORRECTION
PM
AM/FM
uP BUS
8-BIT
DAC
MOD.
CORRECTION
FM
12-BIT
DAC
RF
LEVEL
RF OUTPUT
REF LEVEL
AM
+ RF LEVEL

AF SYNTHESIZER BOARD AB6/1

This assembly provides two AF signals (sine wave, square wave, triangle or sawtooth) for both external and internal use including modulation correction, RF generator level setting and RF attenuator control. Also, a POCSAG signal is provided from a low frequency square wave generator.

These signals supply the AF GEN OUTPUT socket and modulate the internal RF signal generator. The frequencies can be changed very rapidly which enables the generation of DTMF and sequential tones.

AF synthesizer logic array

See Fig. 1-6 and Fig. 7-34.

Both generators are functionally similar and are based on custom-designed CMOS logic arrays IC2 and IC3. Under the control of the microprocessor, a binary number is loaded into the phase increment register. This number is added into the accumulator at a rate determined by the clock input. The output from the accumulator is therefore a binary number that is constantly incrementing by a programmed amount. This number is used as an address to PROMs IC4 and IC5 which are used as look-up tables. The 8-bit wide data from IC4 and IC5 is converted into an analogue voltage by the DACs IC6 and IC7.

The output of each generator (at TP2 and TP4) is a stepped approximation to the waveform. The number of steps depends on the desired frequency and the clock frequency. The larger the phase increment which is programmed into IC2, the sooner the accumulator overflows and starts again from zero, generating a lower number of steps and a higher output frequency.

IC4 and IC5 are large enough to contain four separate waveforms - sine, square, triangle and ramp. These are selected by lines A10 and A11, as the two highest address bits.

Output filters

See Fig. 7-34 and Fig. 7-35.

The outputs from the two generators are fed to third-order low-pass filters IC8b and IC9b. These remove the high order harmonics which are produced by the stepped approximation. In order to maintain the integrity of waveforms other than sinusoidal, the filter can be bypassed for generator 1 by means of analogue switch IC34.

The outputs from the two generators are fed to two halves of dual 12-bit DAC IC10 which is used to set the AF level. The two signals are combined in the power amplifier stage IC12. The output is fed to the AF GEN output socket. IC12 has two gain settings, $\times$ 2 and $\times$ 0.2. This provides output level switching of 0 to 409.6 mV at 0.1 mV resolution and also at 1 mV resolution. Diodes D11 and D12 protect IC12 against large reverse voltages being fed into the AF GEN OUTPUT socket.

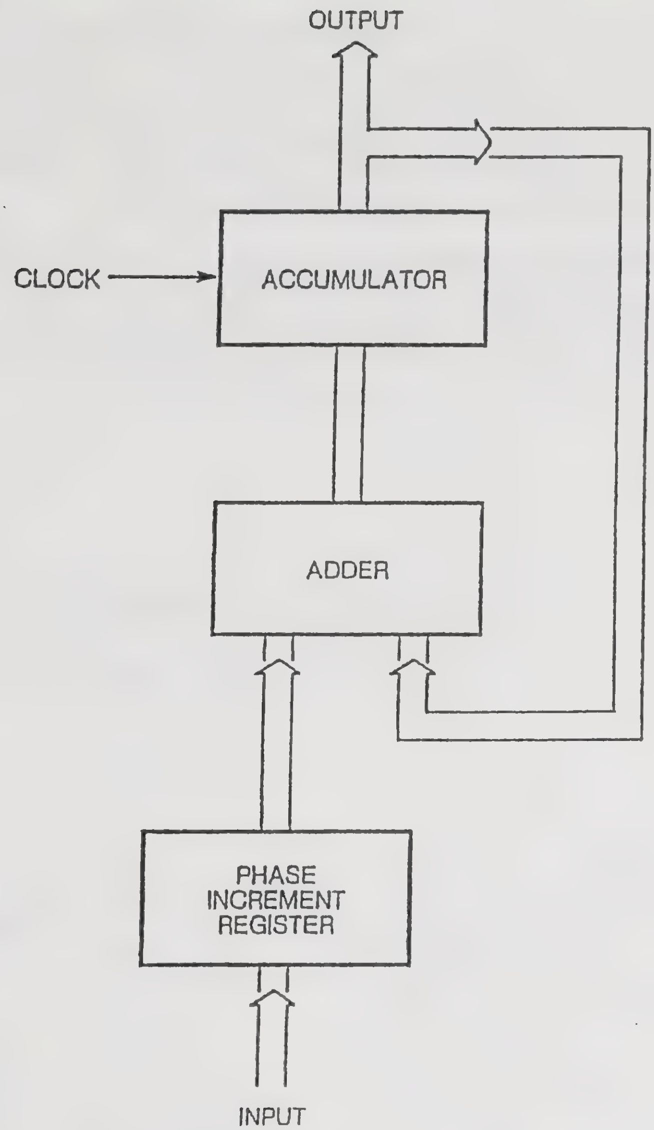


Fig. 1–6 Block diagram of AF synthesizer logic array

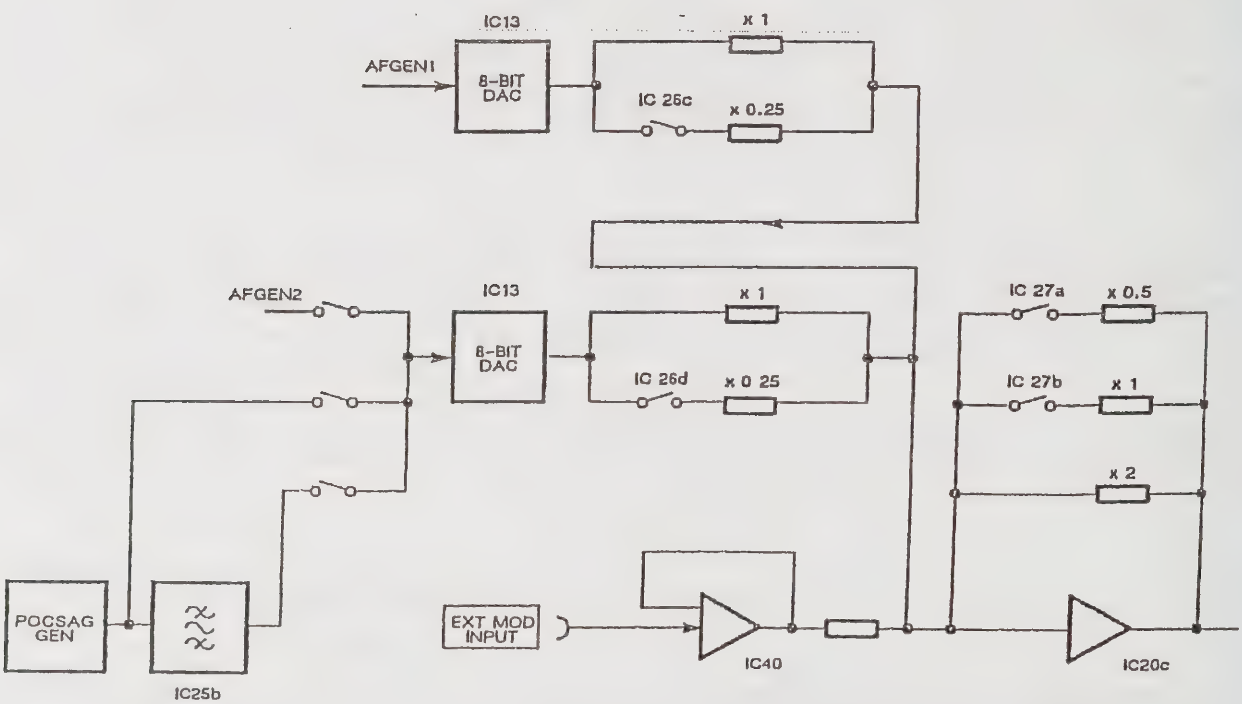
Modulation control circuits

See Fig. 1–7 and Fig. 7–35.

Internal modulation signals come from the AF generator 1, the AF generator 2 and the POCSAG generator as selected by IC28d, IC29a and IC29b. Two signals are applied as inputs to dual DAC IC13 which provides fine level control. Both outputs are then combined with the external modulation signal in amplifier IC14c. This stage has six gain settings, dependent on the modulation selected and on which RF oscillator is selected. Switches IC26c and IC26d provide a 4:1 gain change which provides for full scale modulation settings of 6.25 kHz and 25 kHz (or 25% and 100%). This is necessary in order to maintain setting accuracy at low levels. Switches IC27a and IC27b are connected to give gain ratios of 1:2:4. These are selected depending on which RF range is selected. Amplifier IC14d provides phase modulation conversion using pre-emphasis circuits C15, R30 and R32.

At this point, the level is further scaled to compensate for the modulation tracking inaccuracies of the RF synthesizer. To do this, the microprocessor determines the frequency for FM or the amplitude for AM which has been set and then looks up a table of correction factors. These correction factors are placed in modulation scaling DAC IC15. For FM, the level is now correct and it is passed on the FM MOD line to the RF tray. For AM, the signal is passed to the level setting section.

To enable the RF synthesizer to be frequency modulated at low frequencies (e.g. for POCSAG), a correction signal is generated by the other half of IC15 which is set to the frequency of the RF synthesizer divided by 2.5 MHz. The DAC is used in inverting mode. For low frequencies, the correction factor is large and, for high frequencies, the correction factor is small. The signal is fed to the RF tray on the DPL CORRECTION line.



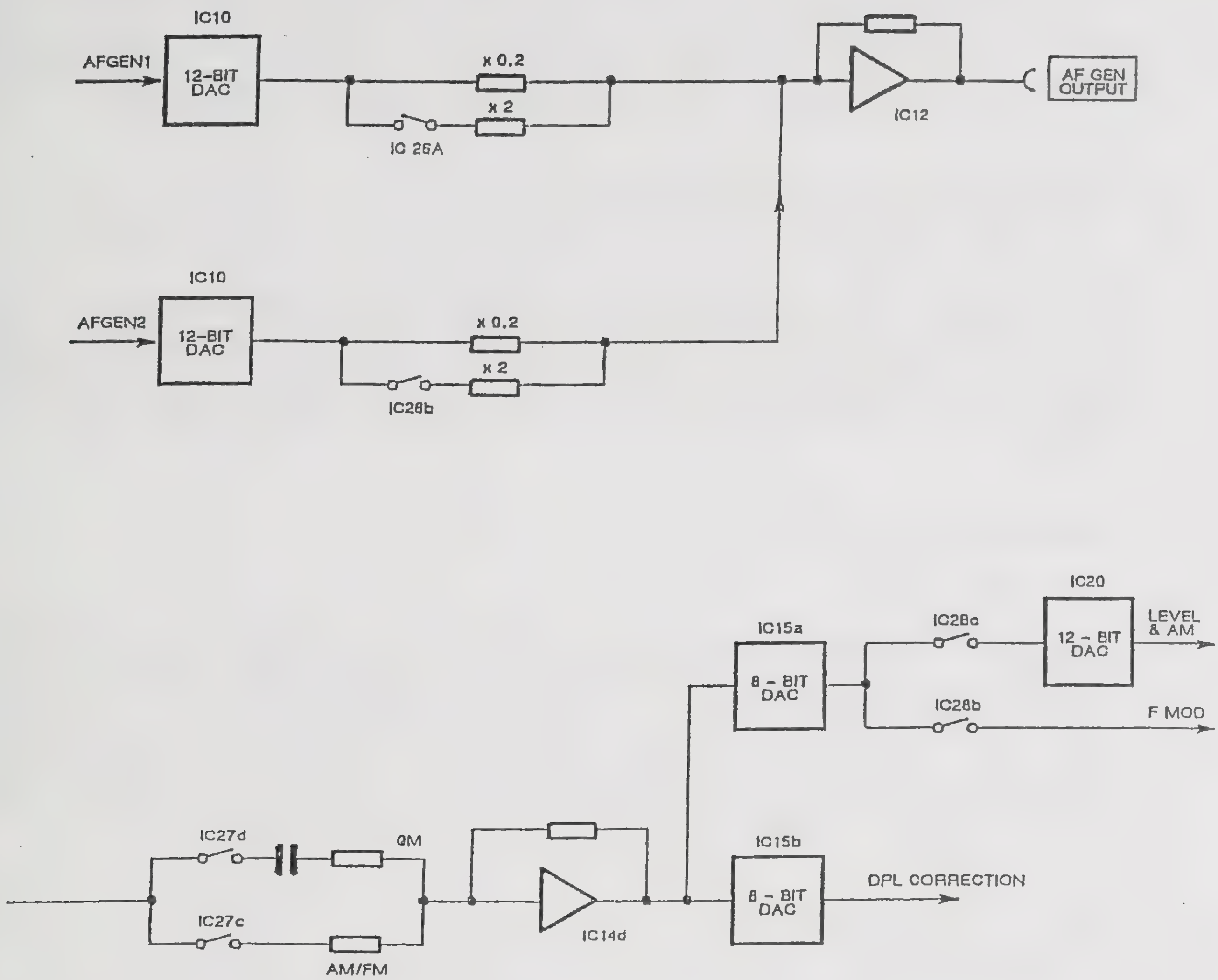


Fig. 1–7 Block diagram of modulation control circuits

RF level setting

See Fig. 7–35.

The RF synthesizer's output level is voltage controlled from this board. The control voltage is supplied from 12–bit multiplying DAC IC20 together with a stable voltage source. Any required amplitude modulation is summed with the control voltage so that it is automatically scaled with the level. The reference voltage generated by Zener diode D9 and set by resistor R20 is summed with the AM by amplifier IC16c. The composite signal is then scaled by IC20. The lowest 4 bits on lines D0 to D3 are first latched into IC18 (on Fig. 7–22). Output to the RF tray is on the LEVEL AND AM line.

Microprocessor interface circuit

See Fig. 7–34.

Two 3 to 8 line decoders, IC23 and IC24 provide the on–board addresses and hence the chip selects. These are gated through latch IC36 with the board select line to reduce induced microprocessor noise. The data lines onto the board are also gated through buffer IC37 for the same reason. This also has the benefit of reducing off–board loading.

Switching and attenuator control

See Fig. 7–34.

The attenuator and control line information from the microprocessor is fed through latch IC30. The two input switching control lines for IPSELECT and DUPLEX are buffered by open–collector drivers TR7 and TR8 with catch diodes D7 and D8. The high current requirements of the attenuator solenoids necessitate the use of an additional buffer IC31. The attenuator drive signal consists of a software generated pulse approximately 20 ms long on the required control line. Monostable IC38 holds the drive transistors off when the software is not running (e.g. at power up).

POCSAG data generator

See Fig. 7–35.

The low frequency square wave generator for low frequency data for POCSAG and other systems consists of bistable IC39, switches IC29c and IC29d and amplifiers IC25a and IC25b. At the beginning and end of each pulse train, the generator is set to the off state with both IC29c and IC29d open. Thus, the mean modulation voltage is zero and the RF generator does not detune.

RF MODULATION METER

See Fig. 1–8.

On the RF modulation meter board AA1, the input signal in the range 1.5 to 1000 MHz from the RF counter board AA2 is fed through a 20 dB attenuator to a mixer. An additional 20 dB attenuator on the RF counter board AA2 can be switched into circuit to prevent overloading the mixer. The mixer reference input is selected from one of two frequencies. One frequency is obtained directly from an 11.5 to 13.8 MHz oscillator and the other is derived by mixing the oscillator output with the 10 MHz standard from the CRT drive board AC1/1.

The difference frequency of 1.5 to 3.8 MHz follows two paths. One path is to the main mixer and the other path is compared for phase with a divided input from the frequency standard. Comparison is made by a synthesizer IC operating under micro-processor control. The resulting DC is then used to control the VCO. Depending on the frequency of the input as measured by the RF counter, the microprocessor on the microprocessor board AB4/2 selects either the HI line or the LO line to provide the reference for the sampling gate mixer. The resulting 110 kHz IF is fed through a 500 kHz low-pass filter to a 40 dB amplifier. Finally, the signal is fed to the demodulation and scope board AB5/2 for demodulation and also to the rear panel IF OUT socket.

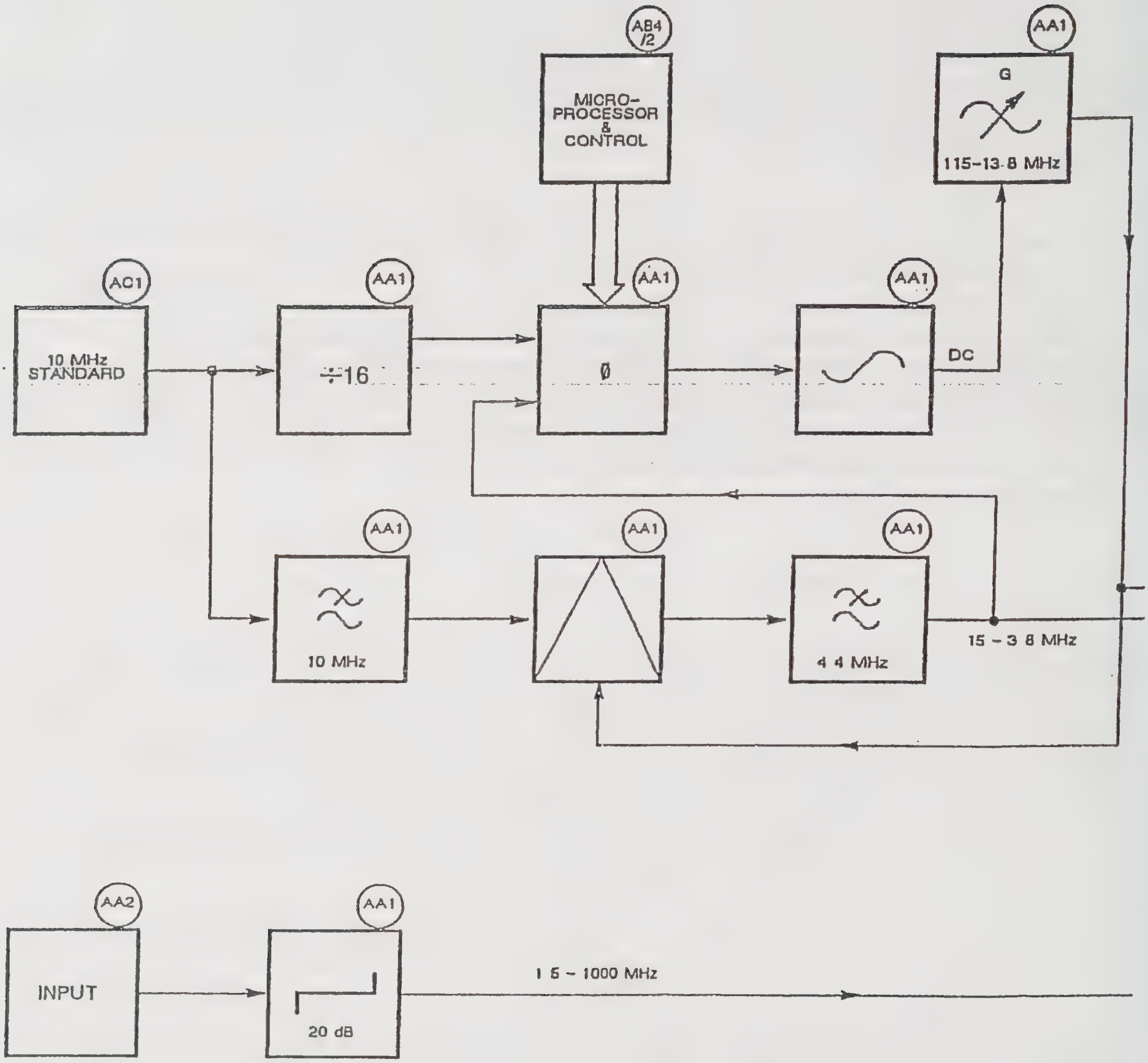


Fig. 1–8 Block diagram of RF modulation meter circuits

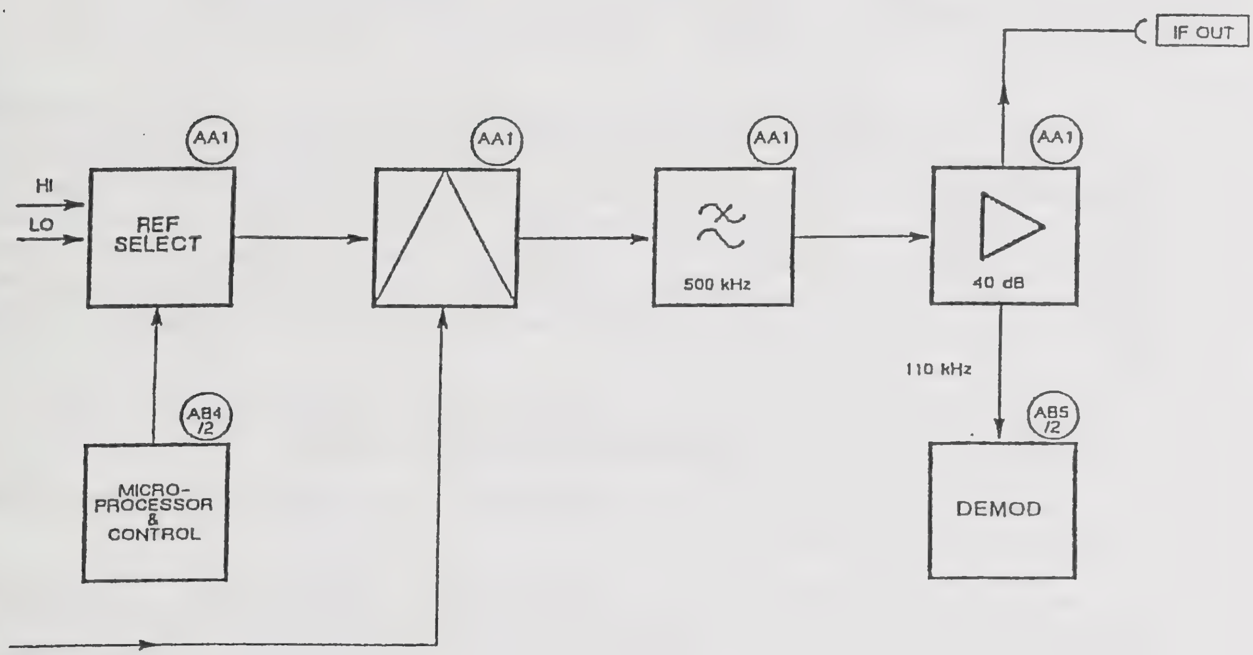
RF MODULATION METER BOARD AA1

This assembly contains the RF section of the modulation meter. It consists basically of a synthesized oscillator and a sampling gate mixer followed by IF amplification and filtering.

Oscillator and PLL

See Fig. 7-6.

Oscillator TR4 is voltage controllable in the range 11.5 to 13.8 MHz and is phase-locked to the instrument's 10 MHz crystal oscillator. Voltage control of frequency is by means of varactors D1 to D4. The oscillator is powered from –9 V supplied by regulator IC5 which is heavily decoupled to minimize power supply noise. To prevent pick-up and to reduce microphony, the oscillator is shielded in a casting.



The oscillator output is fed to squaring amplifier TR5 and TR6 which produces a TTL compatible output which follows two paths. One path is through diode D9 to quad 2-input NAND-gates IC6 (on Fig. 7-4) which is configured as a single pole changeover switch. The other path is to double-balanced mixer IC2. The second input to the mixer is derived from the 10 MHz crystal oscillator and 10 MHz filter to give only the fundamental frequency. Mixer output is in the required range of 1.5 to 3.8 MHz, but with unwanted mixer products (notably the fundamental input frequencies at 10 MHz and 11.5 to 13.8 MHz), which are removed by the 4.4 MHz low-pass filter.

The output then is fed to squaring amplifier TR2 and TR3 which gives a TTL compatible output which follows two paths. One path goes to IC6 (on Fig. 7-4) as the second input to the logic changeover switch. The other path provides the frequency to which the circuit phase locks and this is fed to synthesizer IC3 pin 3. The reference frequency for IC3 is derived from the 10 MHz crystal oscillator through IC1. IC3 contains microprocessor-programmed reference and oscillator dividers and a phase comparator. The differential output from the phase comparator is fed to PLL filter IC4 which removes the phase comparator frequency of 265 Hz and provides a DC control voltage to varactors D1 to D4 and hence completes the loop.

Mixer and output

See Fig. 7-7.

When the LO/HI signal from PLA contact 9 is taken high, the 1.5 to 3.8 MHz input from TR3 is gated through IC6a and IC6b. When the signal is taken low, the 11.5 to 13.8 MHz input from TR6 is gated through IC6c to IC6b. The selected signal drives Schmitt trigger TR7 and TR8 which then drives sampling gate mixer diodes D7 and D8 through balun T1 and capacitors C55 and C56. When the higher frequency input is selected, the low HI/LO signal switches on transistor TR14 and temperature compensation for the diodes is applied by thermistor R86 and the network in the emitters of TR7 and TR8.

For most modulation meter frequencies, the high frequency input is selected, the low range being used only for continuity of frequency coverage.

The modulation meter input, on the RF INPUT line, is applied through a 20 dB pad to the sampling gate mixer.

Sampling gate output is at the IF of 110 kHz and at a level equal to the RF input to the sampling gate diodes. The output is buffered by FET TR9 and transistor TR11 and then filtered by a 500 kHz low-pass filter which removes unwanted signals (such as sampling gate drive frequencies). Next, the signal is amplified by 40 dB using transistors TR12 and TR13 and fed on the IF OUTPUT line for demodulation on the demodulation and scope board AB5/2. A second, buffered output is provided by transistor TR15. This is fed on the MONITOR OUTPUT line to the rear panel IF OUTPUT socket.

DEMODULATOR, VOLTMETER AND POWER METER

See Fig. 1–9.

The input from the modulation meter on the RF modulation meter board AA1 is sent on the demodulation and scope board AB5/2 on two parallel paths. The AM path is through a 40 dB attenuator, an AGC controlled amplifier and a band–pass filter to an AM detector. The FM path is through a high–pass filter to the FM discriminator. Both paths feed through 15 kHz low–pass filters, with de–emphasis applied on the FM path for ΦM.

The modulation selector connects the three inputs to the voltmeter input selector. This also connects to the optional RF Directional Power Head at the ACCESSORIES socket and to the AF INPUT socket for AF or a modulated DC as selected by the AC/DC key. Switched filters implement 300 Hz low–pass and 0.3 to 3.4 kHz high–pass filtering.

Output for monitoring purposes is taken to the audio amplifier on the motherboard AB1/1. For voltmeter measurements, the signal is connected to an ADC either directly or through a SINAD filter. The RF power ranging circuit, operating under microprocessor control, is also connected to the ADC. The output selector connects either the output from the filters or the AF input for feeding to the AF counter on the microprocessor board AB4/2 and to the oscilloscope on the digital scope board AB2/2.

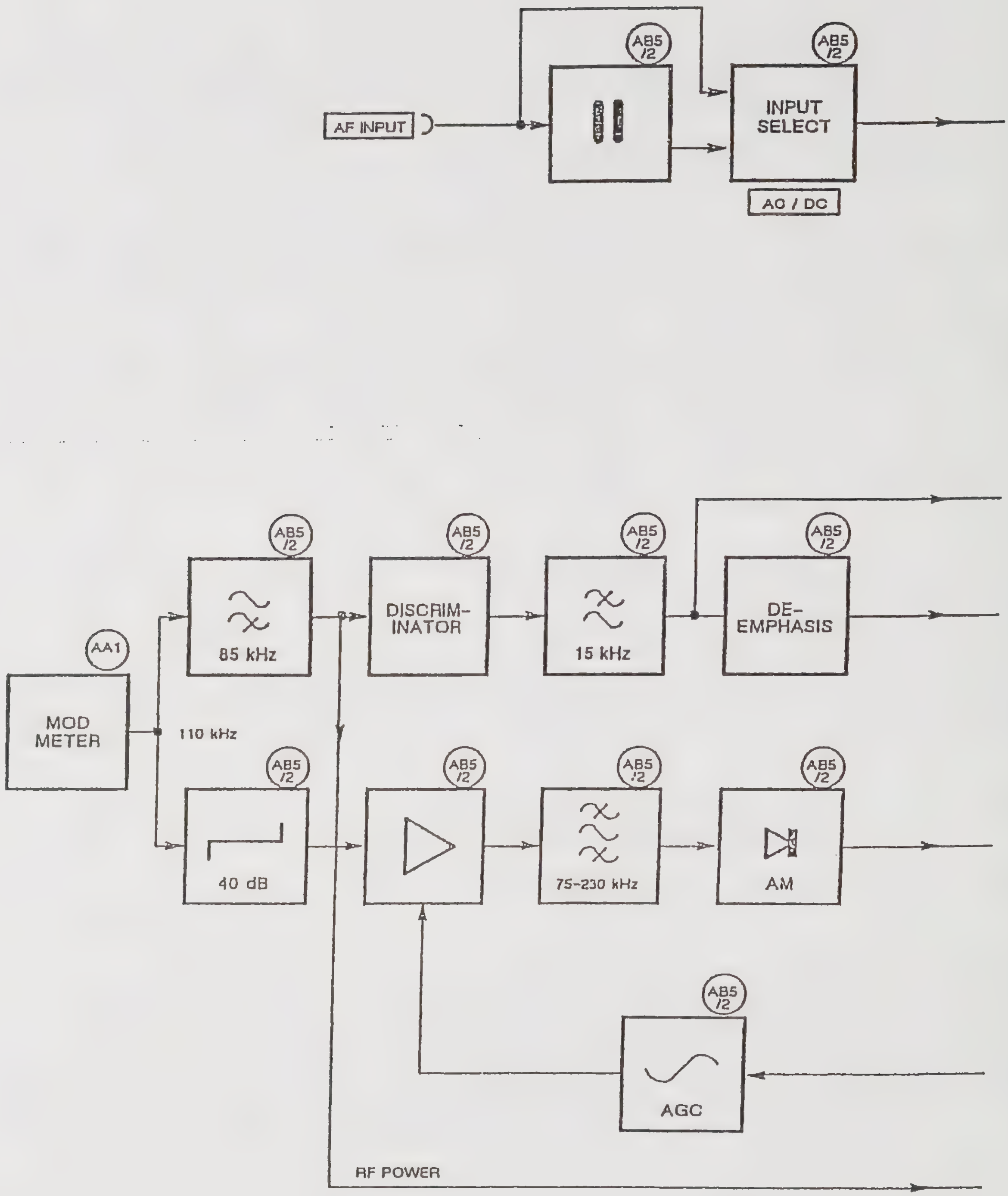
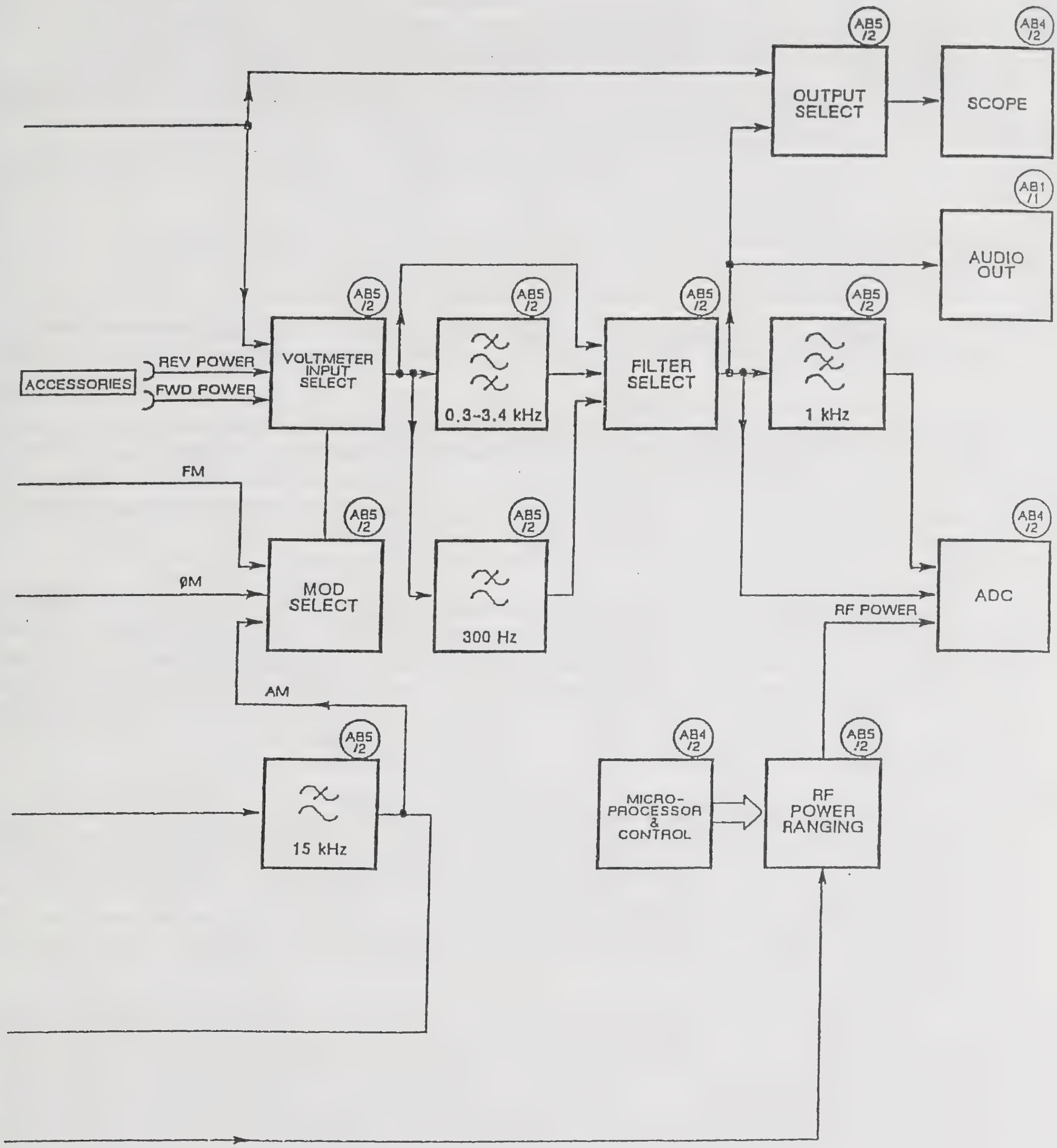


Fig. 1–9 Block diagram of demodulator, voltmeter and power meter circuits


AB5 /2
OUTPUT SELECT
AB4 /2
SCOPE
AB1 /1
AUDIO OUT
AB5 /2
VOLTMETER INPUT SELECT
REV POWER
FWD POWER
ACCESSORIES
AB5 /2
0.3-3.4 kHz
AB5 /2
FILTER SELECT
AB5 /2
1 kHz
FM
ØM
AB5 /2
MOD SELECT
AB5 /2
300 Hz
AB4 /2
ADC
RF POWER
AM
AB5 /2
15 kHz
AB4 /2
MICRO-PROCESSOR & CONTROL
AB5 /2
RF POWER RANGING

DEMODULATION AND SCOPE BOARD AB5/2

This assembly contains all the demodulation circuits and ranging for AM, FM and ΦM, all amplitude ranging for the voltmeter, oscilloscope and RF power meter and also several audio filters. The board performs the following two main functions:-

(a) Demodulation of the IF (including voltage ranging) from the RF moculation meter board AA1.

(b) Measurement of all AF and DC voltages, including the demodulated AF from (a) above.

IF demodulation

See Fig. 7-30.

After the 110 kHz IF is fed to this board from the RF modulation meter board AA1 on the IF IN line, it follows two paths. One path is for FM or ΦM and the other is for AM.

The FM or ΦM path first passes through 85 kHz high-pass filter IC100 to remove low frequencies (especially 15.625 kHz from the CRT drive) and then it splits into two paths. One path is to the RF power meter ranging amplifier (on Fig. 7-20) while the other path continues to comparator IC102 which acts as a limiter, the output being at TTL level. The output is fed to a pulse type discriminator monostable IC103 which produces pulses of a fixed width but with a varying mark/space ratio due to the modulation of the IF.

The discriminator output is fed to 15 kHz low-pass filter IC104a and IC104d which has a gain of 4. This is followed by unity-gain 30 kHz filter IC104c which attenuates frequencies above 15 kHz (especially the 110 kHz IF). The signal is then a demodulated FM plus a DC level corresponding to the IF. To remove the latter, IC104c is AC coupled to amplifier IC104b, which enables the output level to be set using preset R129. For ΦM, the signal is fed to IC105 which applies 750 μs de-emphasis. For FM, IC105 is by-passed.

The AM path is first reduced 40 dB by attenuator R135 and R136 so that the following AGC section works with little distortion. At this point, the DC bias is set by preset R138. AGC is accomplished using a dual-gate MOS FET TR101 which is followed by amplifier TR102. TR102 amplifies the signal by about 50 before feeding it to band-pass filter IC106a and IC106b. The filter consists of a 75 kHz high-pass filter with a gain of 10 followed by a 230 kHz low-pass filter. This substantially reduces the noise bandwidth.

The signal is fed to AM detector IC107 and then to 15 kHz low-pass filter IC108a and IC10-8d which is configured similarly to the one used for FM. Output is then a demodulated AM plus a DC level corresponding to the mean carrier level. At this point the signal takes two paths. One path is to integrator IC108b which provides a DC which is fed back to TR101 as the AGC control signal. The reference AGC level is set by R172. For the second path, IC108d is AC coupled to amplifier IC108c which enables the AM output level to be set using R168.

One of the three sections of IC317 selects the required demodulated AM, FM or ΦM which is to be fed on the DEMOD line to the output filters. The fourth section injects a 5 V square wave (switched by the microprocessor) to generate the RF overpower warning signal.

Ranging and filters

See Fig. 1-10 and Fig. 7-32.

The AF input on the AF IN line is AC coupled when capacitor C200 is connected by relay RLA or DC coupled when C200 is bypassed by RLA. The 1 MΩ input impedance is determined by resistor R201 and inverting amplifier IC200. The gain of IC200 is set to ÷2 when switch IC319d is open or to ÷20 when switch IC319d is closed. From IC200, the output takes two paths. One path is to the oscilloscope and the second path is to the voltmeter.

The oscilloscope path starts with amplifiers IC201 and IC203a. The gain of IC201 is set to 10 when switch IC312c is open or to 1 when IC312c is closed. IC203a enables the gain to be set for calibration using preset R209. Switch IC316b selects the AF input or switch IC316c selects an input from the voltmeter. The voltmeter input is from voltage follower IC205 which is connected to resistors R233 and R234 and switch IC316d to set the level according to modulation. Switch IC316d is closed for AM and open for FM and ΦM.

Switched gain amplifiers IC204a and IC204d provide ranging for the oscilloscope. The input from the vertical POSITION control, which is fed through voltage follower IC205b, and the oscilloscope ranging levels are summed in filter IC204c. This filter has a roll-off at 50 kHz to prevent aliasing.

In the voltmeter path, switches IC319a, IC319b and IC319c select the AF input, the forward power input or the reverse power input. The signal on the AF IN line, the FWD POWER line or the REV POWER line is fed to amplifier IC202 which has a gain of 1 when switch IC312d is closed or a gain of 10 when IC312d is open. For calibration purposes, the voltmeter gain is set by amplifier IC203b using R231. At this point, switches IC312a and IC318a determine whether the AF input or the input on the DEMOD line continues along the voltmeter path.

Switches IC318a and IC318b function as a 2-pole 4-way switch. In the first three positions, they pass the signal to the oscilloscope and voltmeter directly, or through the 0.3 to 3.4 kHz band-pass filter. In the fourth position, EXTERNAL filter mode, it routes the demodulated signal directly to the scope and DEMOD OUT socket and routes the AF input to voltmeter. It is then possible to insert an external filter in the voltmeter path.

The selected AF or DEMOD signal is fed through IC318a to amplifier IC204b which provides the ranging for the voltmeter. The signal is fed either through a SINAD filter or through a by-pass line as determined by two sections of switches IC313. The filter is a 1 kHz notch filter with a gain of 10. The third section of IC313 is used to select an input on the RF POWER line from the RF power ranging circuit. The output on the VOLTMETER line is to the ADC on the motherboard AB1/1. A switched output is available on the ±PK line to peak detectors on AB1/1 for measuring modulation levels.

Switching

See Fig. 1–10 and Fig. 7–31.

All gain settings and signal routeing are performed under microprocessor control. Octal latches IC304, IC305 and IC306 control, through multiplexers IC307, IC308, IC309 and IC311, the operation of analogue switches IC312 to IC319 and also maintain the switch positions once they have been set. All of the switches use TTL levels on the control lines while their outputs switch between the +12 V and −12 V rails.

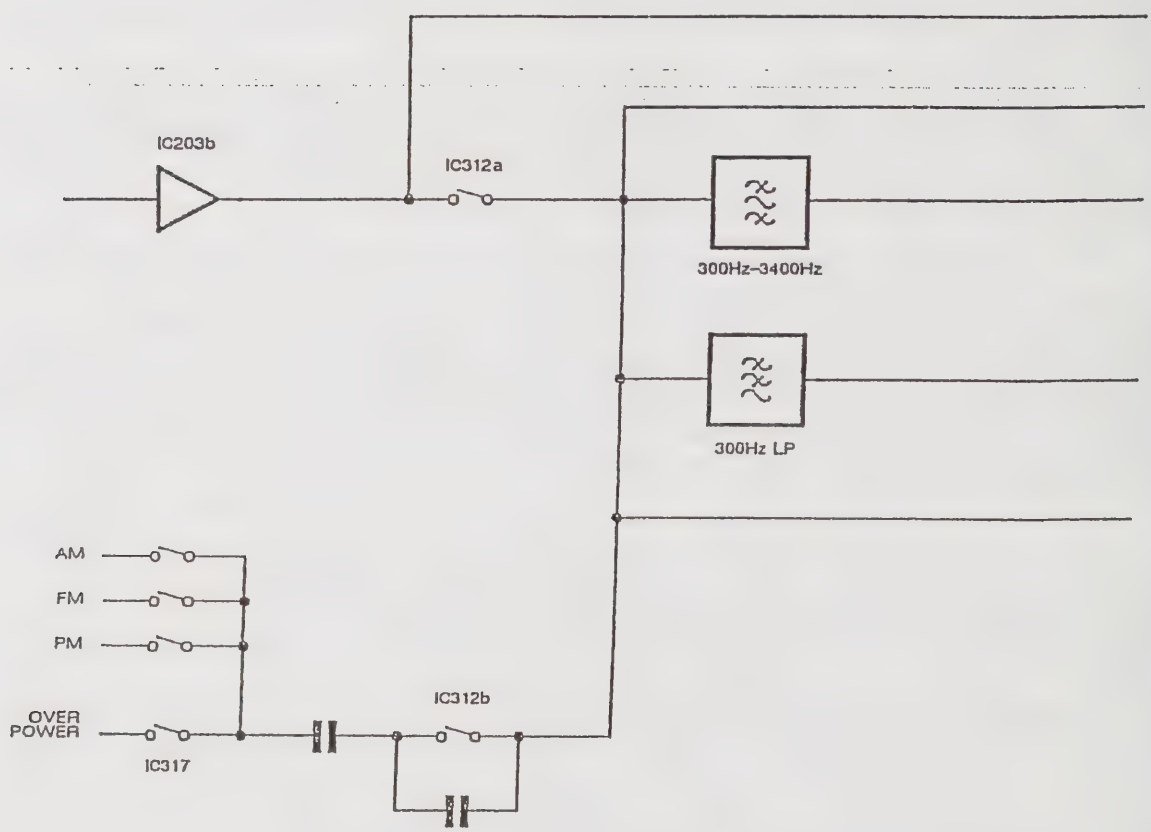
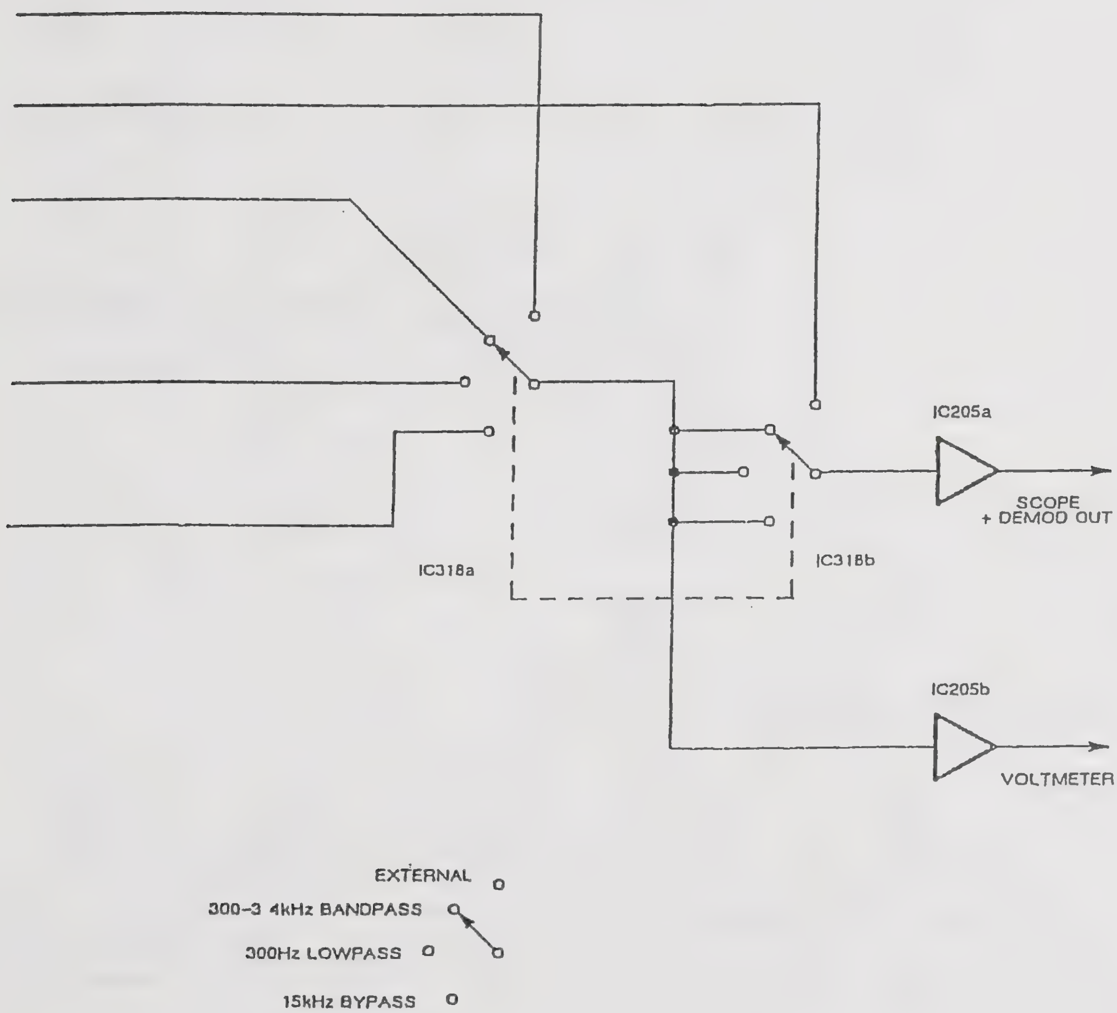


Fig. 1–10 Block diagram of voltmeter and scope output circuits

An output from the 85 kHz high-pass filter IC100 (on Fig. 7-19) is fed to amplifier IC101a to provide the RF power signal. The gain is set by preset R106.

RF power ranging is effected by switched gain amplifier IC101b. The required stage gain is selected by switches IC322. These are controlled by multiplexer IC311 through level shifters IC321. Output on the RF POWER line is switched to the required destination by IC313 (on Fig. 7-21).



OSCILLOSCOPE

See Fig. 1–11.

The input from the demodulation and scope board AB5/2 to the oscilloscope is ranged and summed with the vertical shift POSITION control on the scope keyboard AF2/2. A 50 kHz low-pass filter feeds out to both the scope trigger on the VDU Board AB3/2 and the ADC on the digital scope board AB2/2. The selected single or repetitive trigger from the microprocessor board AB4/2 is selected and used to gate in, from the CRT drive board AC1, the 10 MHz standard which provides the clock for the write address counters.

For the read address counters, the clock is provided by VDU board AB3/2. These addresses are used to access the display RAM. The data held in RAM is from the maximum and minimum data selectors from which the vertical trace is selected at the line rate for output to the pulse stretcher on AB3/2.

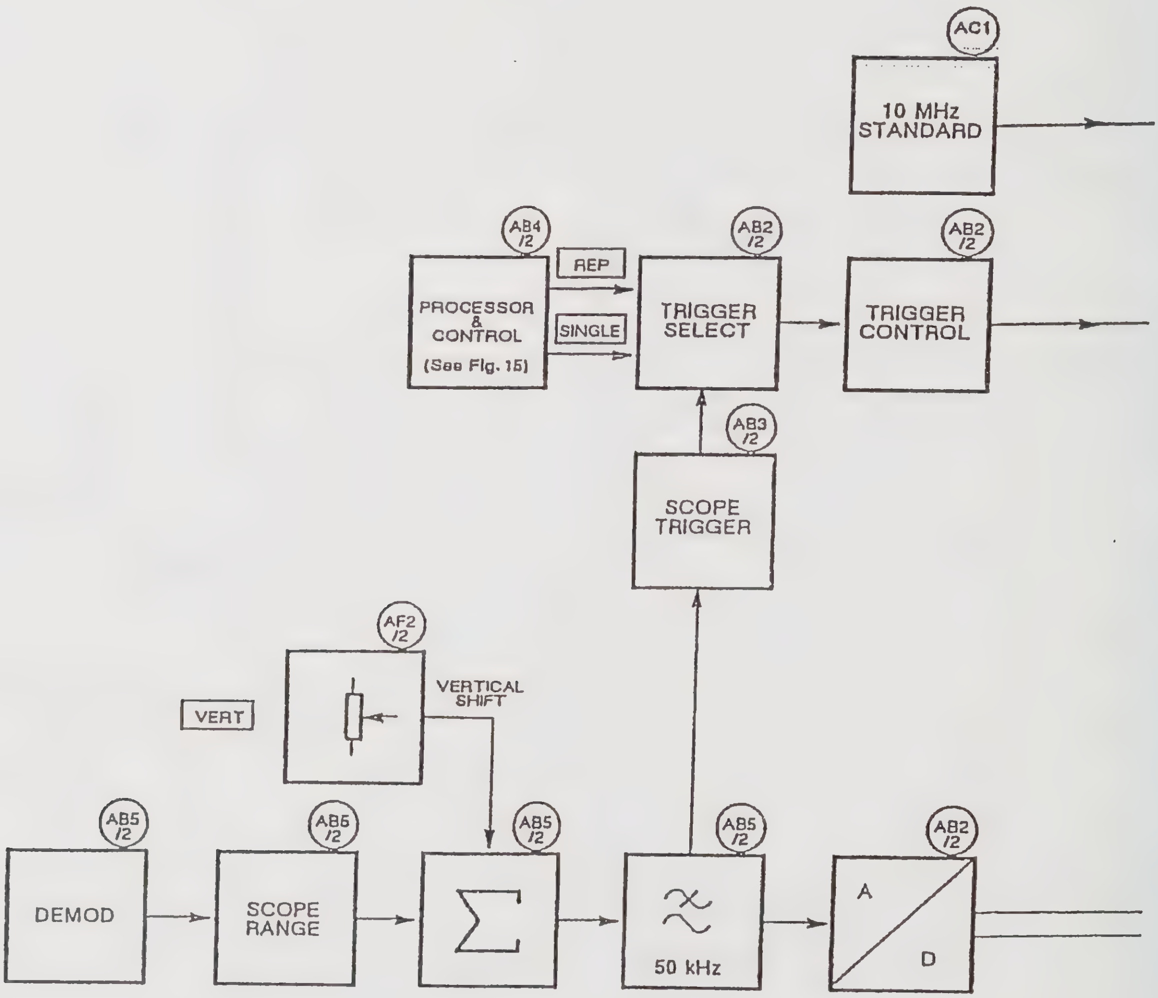
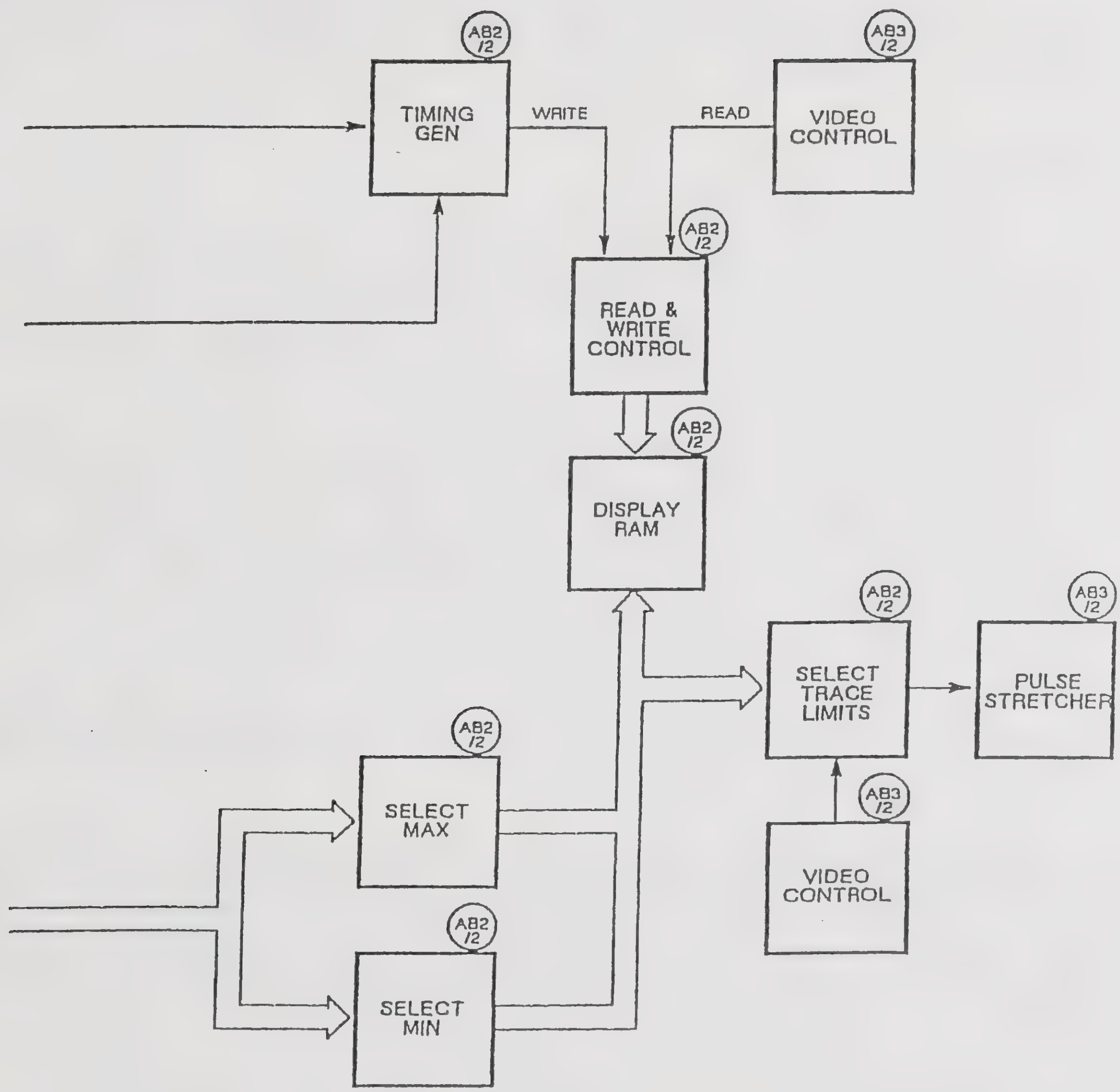


Fig. 1–11 Block diagram of oscilloscope


AB2 /2
TIMING GEN
WRITE
READ
AB3 /2
VIDEO CONTROL
AB2 /2
READ & WRITE CONTROL
AB2 /2
DISPLAY RAM
AB2 /2
SELECT TRACE LIMITS
AB3 /2
PULSE STRETCHER
AB2 /2
SELECT MAX
AB3 /2
VIDEO CONTROL
AB2 /2
SELECT MIN

DIGITAL SCOPE BOARD AB2/2

This assembly converts the analogue waveform into 400 8-bit digital samples which are stored in RAM. The samples are stored for the purpose of updating the screen which also gives the oscilloscope an indefinite storage capacity. Samples of the analogue signal are taken every 2.5 μs by an ADC. This rate is much higher than the ordinate (displayed line) rate since otherwise the display could sample and show, for example, only the troughs of an AC signal thus giving the appearance of DC.

The sample values which are stored at the ordinates are the maximum and minimum values which have occurred since the previous ordinate. This ensures that positive and negative spikes are always captured, provided that they are longer than 2.5 μs in duration, regardless of timebase setting. Lines on the screen at the ordinates are drawn between whichever is the greater of the current and the next stored maximum and whichever is the least of the current and the next stored minimum.

The oscilloscope raster is interlaced so that each ordinate only needs to be refreshed every 40 ms. The method of drawing eliminates possible flicker by ensuring that lines are never drawn singly even if they correspond to large spikes.

Waveform conversion

See Fig. 1-12 and Fig. 7-20.

The signal on the SCOPE IN line is connected to ADC IC1 which uses +5 V from regulator IC49. This voltage can be adjusted slightly by preset R14 so that the calibration of the oscilloscope corresponds to the calibration of the ADC on the microprocessor board AB4/2. The output from IC1 is fed to latch IC2 and applied to two 8-bit comparators IC3 with IC5 and IC4 with IC6.

IC3 and IC5 is the maximum comparator which compares the current sample which is latched in IC2 with the previous maximum stored in latch IC7. If the current sample value is greater than the stored one, it opens gate IC13b to a clock signal which is generated when the QD outputs from counters IC26a and IC26b go high. The data is then transferred from IC2 to IC7 to become the new maximum data value. However, if the current sample is smaller than the stored one, it is the minimum latch IC8 which is clocked and the current data byte becomes the new minimum data value.

Sampling continues until the two latches hold the maximum (peak) and minimum (trough) values found during one ordinate period. The maximum and minimum latch outputs from IC7 and IC8 connect to the A and B inputs of the data selector which is formed by multiplexers IC10 and IC11.

When IC10 and IC11 are enabled by their pins 15 being taken low by the SCOPE TIMEBASE signal, the inputs are connected to the data bus. Since SCOPE TIMEBASE occurs at the ordinate rate (which is variable and depends on timebase setting), only the peak and trough values during the preceding ordinate period are passed on. When IC26b QB goes low, the peak value is output and, when it returns high, the trough value is output.

The data are sent into two consecutive locations in display RAM IC12. Write address counters IC18a and IC17a are incremented. IC7 and IC8 are both reloaded at this time with the current sample which is latched from IC2, ready for comparison with the next sample.

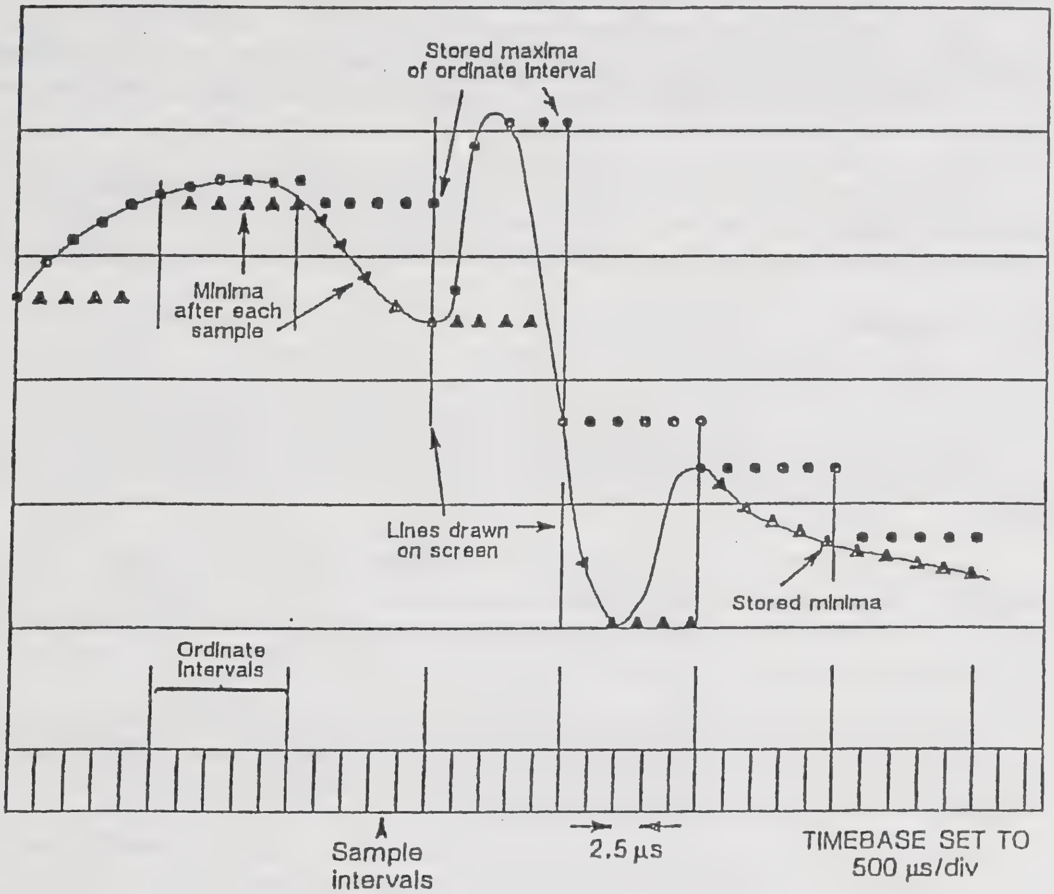


Fig. 1–12 Oscilloscope display generator process – AB2/2

Trigger control circuit

See Fig. 7–20.

The data conversion and storing process is turned on and off by the trigger control circuit. This is done synchronously with the incoming waveform so that the latter is displayed stationary.

When IC18a and IC17a reach their highest count and IC12 is full, pin 8 on write address counter IC17b goes high which sets D-latch IC23a. This takes the clear lines for IC18a and IC17a high, preventing any further writes to memory. IC23a is reset to re-enable memory writes when a negative edge is received on the TRIGGER line from the VDU board AB3/2. This signal is a squared version of the waveform which is to be displayed. This ensures that the waveform is shown without jitter on the screen because the first location in memory is always at the same point on the waveform.

When TRIGGER signals are present, oscillator IC31, which has a period of 225 ms, is continuously reset. The negative edges of its output thus occur coincidentally with the negative edges of the TRIGGER signals. These clock IC23a pin 3 as though they were the trigger.

When there is no audio signal is present of sufficient amplitude to generate a TRIGGER pulse, IC31 free-runs. Thus, through gate IC34b, IC23a is continuously reset as if a triggering waveform had been present thereby causing the oscilloscope to free run.

Single sweep

See Fig. 7–20.

When the SINGLE SWEEP key is pressed, the SS/RST (single sweep/reset) line is pulsed low for a reset which, through gate IC24c, sets IC23a pin 5 high. This has four effects.

Firstly, pin 11 on gate IC27d is enabled to go low when LOAD DISPLAY COUNTERS goes high. This closes gate IC27a to the 10 MHz clock and thus halts the timing generator. The generator halts with LOAD DISPLAY COUNTERS held high so that the screen refresh is allowed whenever it is required.

Secondly, the write address counters are cleared. The occurrence of the reset pulse has the same effect as the write address counters overflowing. The current sweep is terminated to save the user waiting in slow timebase settings.

Thirdly, the R–S latch IC27b and IC27c (cross-coupled NAND gates) is also set which causes gate IC34b to close and block any trigger output from oscillator IC31.

Fourthly, latch IC23b is reset and opens gate IC34d ready for the next TRIGGER pulse.

When the next TRIGGER pulse occurs, it clocks IC23a output pin 5 low. This immediately reopens gate IC27a to the 10 MHz clock for the timing generator. This restarts operation. IC23a pin 5 going low also sets IC23b which closes gate IC34d to any further TRIGGER pulses. At the conclusion of the single sweep, the write address counters overflow which sets IC23a output high again to close IC27a to the 10 MHz clock. With both trigger sources gated off by IC34c and IC34d, operation is halted and the display is frozen.

Operation is restarted by the SINGLE SWEEP key being pressed again, thus repeating the above operation, or by the REP SWEEP key being pressed instead. The latter action resets the R–S latch which reopens IC34b to continuous trigger pulses from IC31.

Oscilloscope memory

See Fig. 7-20.

The oscillosope memory consists of read and write address counters, write address counters, data selectors and a sample store which is held in RAM for updating the display. Read and write operations are totally asynchronous.

Write address counters IC17a, IC17b and IC18a are clocked by the timing generator section and cleared by the trigger control section. Read address counters IC19a, IC19b and IC18b are clocked by the 2XLS input at twice the line sync rate while the clear is controlled by R-S latch IC24a and IC24b (cross-coupled NAND gates). The frame sync signal sets this latch which clears the address counters and then holds them disabled for a variable period. This is ended by a pulse from the programmable counter on the motherboard AB1/1.

The generation of the pulse from AB1/1, and hence the delay before reading a waveform sample, is determined by the setting of the horizontal position control which thus sets the starting point of the waveform to be displayed. Selectors IC14, IC15 and IC16 pass read addresses to IC12 when select pin 1 is high and pass write addresses to IC12 when pin 1 is low. The enable inputs OE (Output Enable) to pin 20 and WE (Write Enable) to pin 21 are controlled by the timing generator and prevent read/write conflicts.

Display counters

See Fig. 7-21.

Four pairs of display counters IC35 with IC36, IC37 with IC38, IC39 with IC40 and IC41 with IC42 take the stored values from the RAM and convert them into pulses which cause an oscilloscope trace to be displayed. The four values are the current maximum and minimum and the next stored maximum and minimum. Loading of the counters is controlled by decoder IC48a.

Since the raster is vertically scanned from top to bottom and the oscilloscope occupies the lower half of the screen, the counters are loaded during the first half of the sweep. This occurs when IC48a is enabled by the ENABLE line. IC48a then decodes the pulses on the 12.8 μs line and the LS (Line Sync) line. This takes the Y0 to Y3 lines low in turn to load the counters in four sequential bytes from the RAM.

The display counters feed into four D-type latches IC45 and IC46. Their outputs are gated by four NAND-gates IC47a, IC47b, IC47c and IC47d. This part of the circuit determines which of the two maxima from the counters is the larger and which of the minima is the smaller. These two parameters then define the start and finish of the vertical trace which is drawn on the screen.

To start the sequence, the latches are reset causing SCOPE VIDEO to be taken high. The display counters are then clocked by SCOPE CLK until either IC35 with IC36 or IC37 with IC38 (which contain the two maxima) overflows denoting the maximum of the two values. This clocks a high logic level from either IC46a or IC46b which takes SCOPE VIDEO low to begin the screen trace. SCOPE VIDEO remains low until the last counter overflows, denoting the minimum value, which returns SCOPE VIDEO high and the trace is ended.

VIDEO CONTROL AND FREQUENCY STANDARD CIRCUITS

See Fig. 1–13.

The video control circuit on the VDU board AB3/2 accesses the character generator PROM for read operations to update the display. It also enables the microprocessor on the microprocessor board AB4/2 to access the PROM for write operations to change the display. The PROM holds one screenful of information and this is sent out in serial form from the dot generator. The PROM also selects the attribute to accompany each generated character.

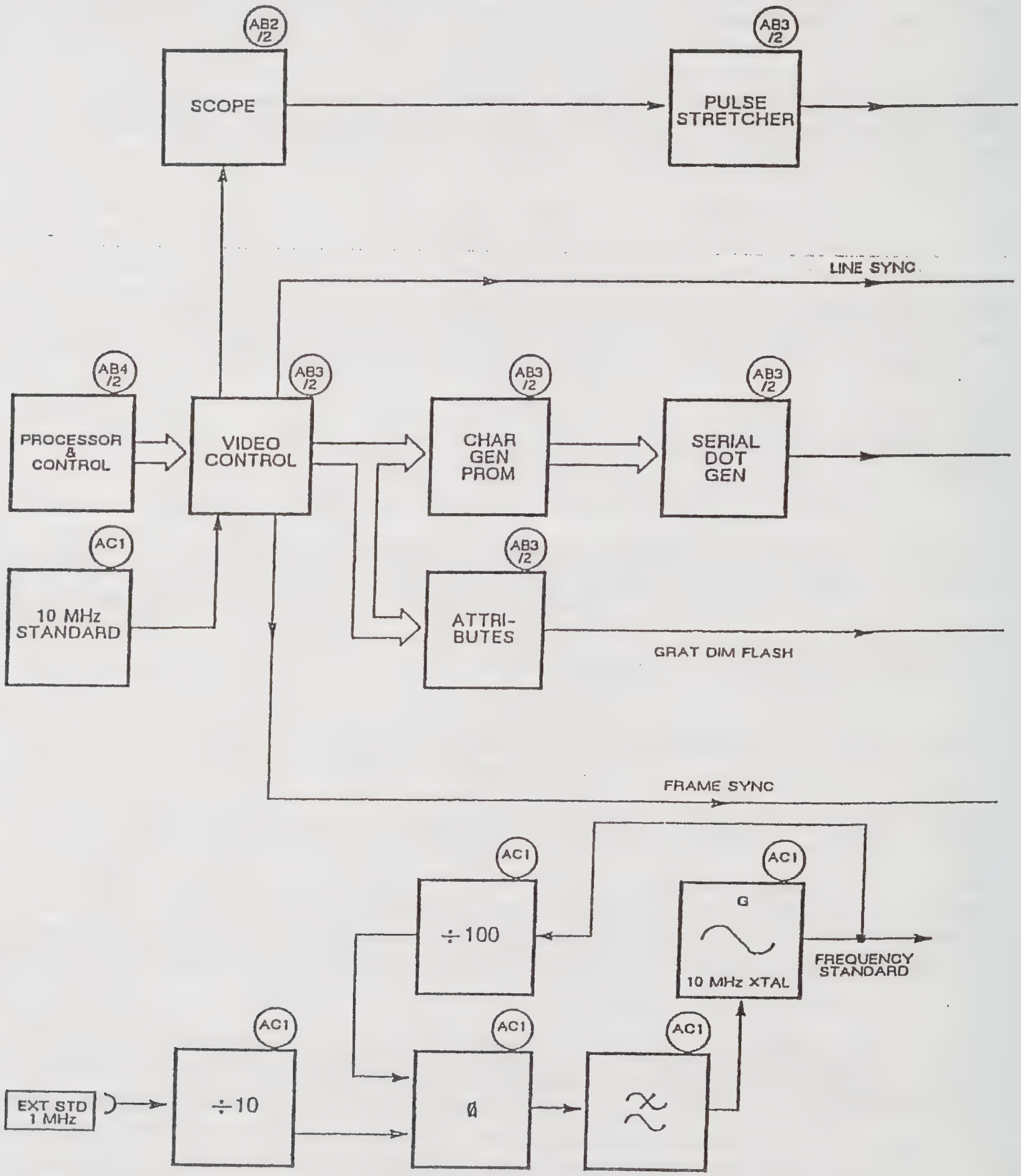
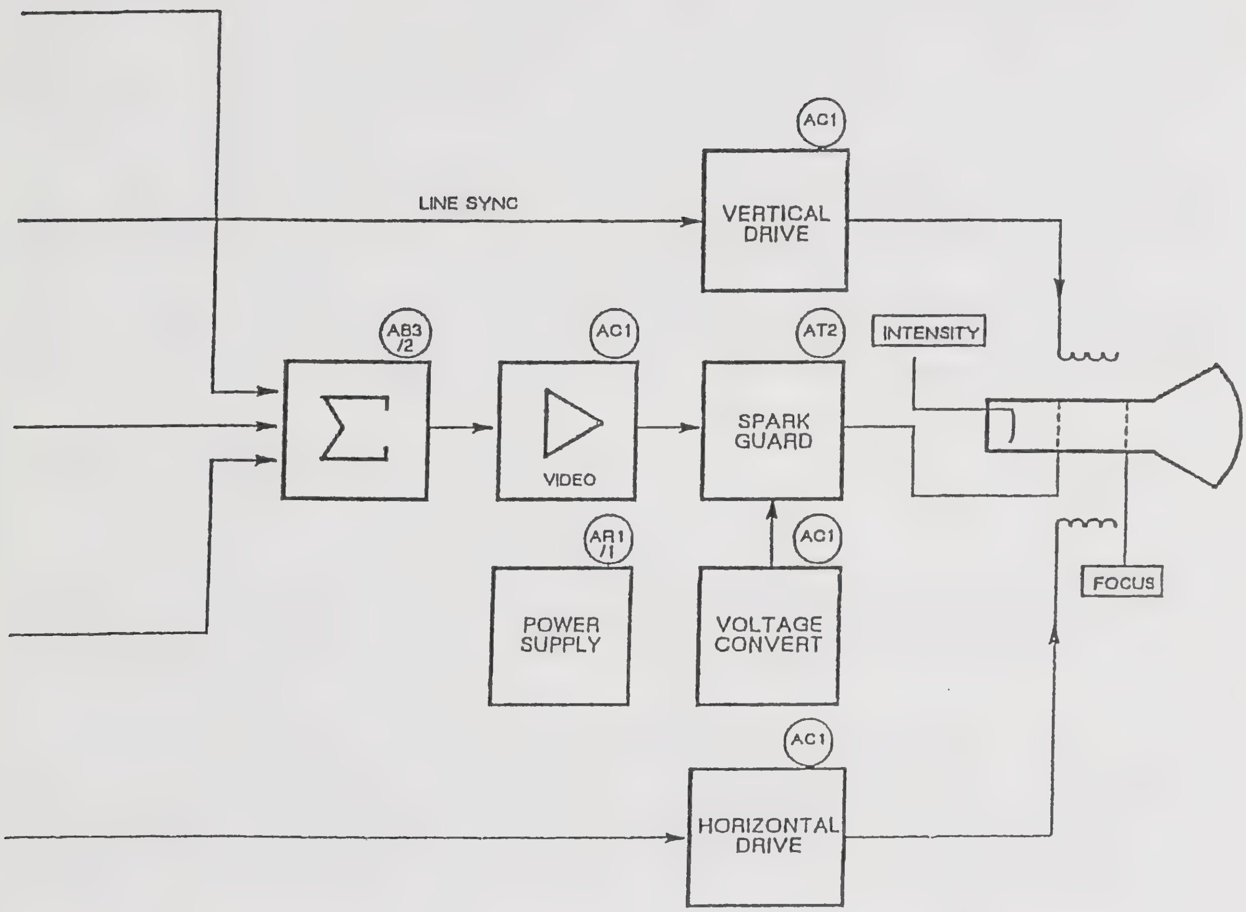


Fig. 1–13 Block diagram of video control and frequency standard circuits


LINE SYNC
AC1
VERTICAL DRIVE
AB3 /2
AC1
VIDEO
AT2
SPARK GUARD
INTENSITY
AR1 /1
POWER SUPPLY
AC1
VOLTAGE CONVERT
FOCUS
AC1
HORIZONTAL DRIVE

Pulses from the digital scope board AB2/2, which provide the oscilloscope trace, are stretched on AB3/2 and then summed with the character and attribute data. The result is fed to the video amplifier on the CRT drive board AC1 for display. On this board, the line sync and frame sync signals from AB3/2 respectively control the vertical and horizontal drives for the CRT. Power from the power supply board AR1/1 is converted to the high voltages necessary for both the board and for the CRT. For the latter purpose, the voltages are connected to CRT base board AT2 which provides flashover protection.

The 10 MHz crystal oscillator on AC1 provides the internal frequency standard. It operates in a phase locked loop to enable a 1 MHz input from the EXT STD socket to supply the standard when required. For phase comparison, both standards are divided down to 100 kHz.

VDU BOARD AB3/2

This assembly contains the display unit timing and character generation circuits. Additionally, it provides the timing for digital oscilloscope board AB2/2 and supplies the line sync and frame sync signals for the CRT drive board AC1. The trigger output is used by both the oscilloscope and the audio frequency counter.

Rows counter

See Fig. 7-23.

This consists of IC16a, IC17a and IC17b. The main purpose is to control the timing of the generation of the dots (pixels) which form each vertical line (ordinate) of the display. To do this, the counter supplies the lower 5 bits of the page memory read address in addition to providing enable signals for the page memory and character generator. The counter also controls the parallel to serial data conversion operation.

The counter is clocked by the 10 MHz CLK signal and supplies, after division by two, the 5 MHz CLK from which is derived the internal operating frequency of the microprocessor. At the end of the count, the line sync pulse is generated. This is fed out to the CRT drive board AC1 and the microprocessor board AB4/2. The signal is also inverted by IC22c and is used to set latch IC14a so that its output is high to open gate IC26c. Then, when LOAD DISPLAY COUNTERS is asserted high, a low ENABLE signal is sent to the digital scope board AB2/2 to allow the display counters to load.

Columns counter

See Fig. 7-23.

This consists of IC18a and IC18b. The main function is to control the timing of the generation of the vertical ordinates which form each frame of the screen display. To do this, the counter supplies the higher 6 bits of the page memory read address in addition to providing the frame sync signal.

For normal operation, data selector IC29 passes its A inputs from the columns counter to provide the frame sync and counter reset signals. When the oscilloscope function is required, IC29 alternately passes its A and B inputs. The columns counter then supplies frame sync signals that are shifted by half an ordinate period so as to provide an interlaced frame for double density plotting of the digitized waveform.

Page memory and microprocessor circuit

See Fig. 7-23.

The interface circuit consists of three latches IC45, IC46 and IC47. It is used for writing to page memory IC34. The latches are loaded in three separate bytes during the vertical scan period. When line sync occurs, signalling the start of the flyback period, the memory is loaded. OE (Output Enable) to the latches and WE (Write Enable) to IC34 are both taken low so that data from IC45 is stored in the location which is specified by the address from IC46 to IC47. The address consists of 11 bits in order to access the 1280 bytes which provide one screenful (40 x 32 characters) of information.

To read from the page memory, the outputs from the rows counter and from the columns counter are used to form the memory address. The address is fed to the bus by tristate drivers IC27 and IC37 when they are enabled by the line sync not being asserted. The 8-bit data from the memory provides the most significant bits of the address for the character generator in addition to being decoded to provide the FLASH, GRATICULE and DIM attributes. The character generator is addressed 32 times during the scan period to form the vertical trace.

Character generator

See Fig. 7-23.

The character generator consists of PROM IC33. Its 8 most significant address bits are provided by the page memory and are used to select the required character of the 256 in the character set. The 3 least significant address bits are provided by character scan counter IC16b. IC16b is clocked at the line scan rate and counts up from 0 to 7 to address in turn each of the 8 vertical lines of the selected 8 x 7 character. Gates IC19c, IC19d and IC20b detect when the count reaches 7 on which the counter is reset to zero. During the scan period, the selected vertical line of the 32 characters to be displayed is fed in parallel bytes to the parallel to serial converter.

Parallel to serial conversion

See Fig. 7-23.

Shift register IC36 converts the parallel input data from the character generator into a serial output on the VIDEO line. New character data from IC33 is loaded into IC36 when its LD (LoaD) input is taken low. To supply the required signal, all of the outputs from binary counter IC16a are fed to NAND gate IC25 together with inverted line sync and modified frame sync signals. The latter inputs prevent loading during either of the flyback periods.

IC36 is clocked by the 5 MHz CLK line so that each pixel (picture element) which forms a character occupies 200 ns. Each bit of data clocked out serially onto the VIDEO line has its logic set to indicate whether the pixel it represents is to be lit or unlit when displayed. The sequence of a load and 8 clock signals is repeated for each of the 32 characters during the vertical scan period.

Video output

See Fig. 7-23.

Normally, when no attributes are asserted, the serial video output from IC36 is routed through NAND gates IC39c and IC38c and then in parallel to OR gates IC43c and IC49d. These feed to resistive combiners R17 and R18 which are current summers for the video amplifier on CRT drive board AC1. This output, on the VIDEO OUT line, provides three levels of intensity – off, bright and dim. The off condition is where the outputs from IC43c and IC49d are both high. The dim condition is where one output is high and the other is low. The bright condition is where both outputs are low.

Attributes

See Fig. 7–23.

The most significant bits of the character address are fed to the character generator and also to decoder gates IC38b, IC32b and IC38a to determine whether an attribute is to accompany the video signal. The attributes are FLASH, GRATICULE and DIM, all of which are asserted low.

When flash is asserted, the low is clocked out from bistable IC40b by the inverted load signal for shift register IC36. The low logic level closes gate IC39c to the video output so that the signal can only pass through IC39d which is controlled by flash rate generator IC28a and IC28b. This binary counter is clocked by the modified frame sync signal at 52.4 Hz and results in the gate being opened for 0.3 s and closed for 0.6 s to give the required approximately 1 Hz flash rate.

When the barcharts are selected for display, DIM is asserted low. This signal through gate IC32d provides a high data input for bistable IC42a. Also at this time, SCOPE VIDEO is inactive since the oscilloscope function is disabled when the alternative barchart function has been selected. Output from pulse stretcher IC23c and IC23d is thus low forcing IC39 pin 3 to go high. Then, when IC42a is clocked by the inverted load signal for IC36, gate IC39b pin 4 is also taken high. This takes gate IC49d pin 13 low causing a high to be applied to the R17 summing arm of the VIDEO OUT line. The accompanying barchart character through the R18 summing arm is therefore at reduced intensity when displayed.

When D–latch IC42b is clocked with graticule asserted low, it has three effects.

Firstly, IC42b pin 8 is taken high which opens gate IC49a to the 10 MHz standard so as to provide the SCOPE CLK signal while the trace is passing through the graticule area. The clock drives the counters on the digital scope board AB2/2 which count up until they overflow so as to define the start and finish of the trace drawn vertically on the screen as described earlier.

Secondly, IC42 pin 8 going high opens gate IC32c to the inverted graticule signal so as to provide a low data input to D–latch IC40a. Then, when the latch is clocked, gate IC39a pin 1 is taken high which opens the gate to the digitized SCOPE VIDEO signal. This signal is inverted by IC39a and fed to both summing arms so that the VIDEO OUT signal causes the waveform to be displayed at maximum intensity. When only the graticule is to be displayed, the absence of the waveform on the SCOPE VIDEO line takes IC39 pin 2 low so that IC49d pin 11 goes high causing the graticule characters to be dimmed whenever they are shown.

Thirdly, the low from IC42b pin 9 is clocked out from D–latch IC42a in inverted form to open gate IC32a. This enables the ODD/EVEN FIELD signal to pass through to data selector IC29 which is generating the FRAME SYNC signal. Flash rate generator IC28a divides the modified frame sync signal by two to provide the ODD/EVEN FIELD signal which causes IC29 to alternately select different synchronizing inputs thus causing the frame scan to be interlaced. This enables the analogue waveform to be displayed at twice the normal resolution.

Scope trigger

See Fig. 7–24.

The signal on the SCOPE INPUT line from the demodulation and scope board AB5/2 is AC coupled and then clipped by diodes D4 and D5 before being applied to peak/trough detector IC48a with D1 and D2. The outputs are smoothed by capacitors C3 and C4 and summed by means of resistors R7 and R8 to determine the average signal level. R7 and R8 are connected to the inverting input of comparator IC48b whose other input is connected to the undetected output of IC48a. IC48b is a Schmitt trigger whose hysteresis is set by R10.

The following Schmitt trigger IC48c increases the speed of the edges of the signal. Diode D3 level shifts the signal so that the output from buffer IC44b is at TTL level. This TRIGGER output supplies the oscilloscope trigger for the digital scope board AB2/2 in addition to being used for period measurement by the audio counter on the microprocessor board AB4/2.

CRT DRIVE BOARD AC1

See Fig. 7–39.

This assembly and the CRT base board AT2 provide the drive voltages to display the information which is generated by digital scope board AB2/2 and the VDU board AB3/2. Electromagnetic scanning is used to generate a 320 vertical line raster every 19 ms on a 19 cm CRT with video modulation applied to the grid.

Frame output

The frame output is provided by TV vertical deflection circuit IC1. The oscillator free-running frequency is determined by resistor R1 and capacitor C4. A linear voltage ramp is produced on C4 whose slope (the nominal frame rate in the absence of synchronizing pulses) is determined by the current flowing through R1. The oscillator is synchronized by pulses at 52.7 Hz on the FIELD SYNC line from the VDU board AB3/2. The height of the generated ramp is determined by the current flowing through potential divider R2 and R3. The shape of the ramp is modified by IC1's internal buffer and by the external linearity resistors R4, R5 and R6 and capacitors C5 and C6. R6 is the frame linearity control. Finally, the modified ramp is fed from IC1's power amplifier through the DC blocking capacitor C8 to the horizontal deflection coils.

The electron beam in the CRT is scanned by changing the flux in the scan coils. Since flux is proportional to current, the current in the frame scan coils is monitored by resistor R12 to enable IC1 to compensate for the inductance of the scan coils and temperature variations. For this purpose, the current ramp in the coils is connected to IC1 pin 10, the inverting input of the preamplifier, and compared with the internal voltage ramp. Any necessary correction is applied to the power amplifier.

Resistors R13, R9 and R11 determine the quiescent operating point of the power amplifier by modifying the DC bias on IC1 pin 10. Diode D1 and capacitor C1 rectify and store a voltage, approximately twice that of the +12 V rail, which is used by the power amplifier to produce a rapid flyback at the conclusion of the ramp. Capacitors C7 and C9 and resistor R14 are used to damp the HF transients which are generated during flyback. The supply rail is heavily decoupled by resistor R36 and capacitors C2 and C3 to prevent frame rate interference.

Line output

The tube is scanned vertically, starting from the top left-hand corner. Pulses at 15.625 kHz are applied on the LINE SYNC line to monostable IC2a which provides a delay, preset by resistor R21, so that the raster is centred vertically on the tube face. Monostable IC2b produces pulses which switch on, from pin 10, line output transistor TR3 or, from pin 12, switch on transistor TR4 to remove excess charge from the base of TR3. TR3 drives the line deflection coils in parallel with the primary of line output transformer T1.

When TR3 is on, a current ramp flows from capacitor C16 through the linearity and width control L1 to the vertical deflection coils causing the CRT beam to scan vertically across the screen. The shape of the ramp is determined by the rate at which the stored voltage on C16 changes. C16 is for 'S' correction and helps to obtain a linear raster by reducing scanning velocity towards the edges of the screen. L1 consists of a saturable inductor and permanent magnet. Saturation point, and thus the linearity, is adjustable by altering the orientation of the magnet.

The inductance of L1, and hence the current through the scan coils, is adjustable to obtain the desired raster height. When TR3 is turned off, the CRT beam is rapidly deflected back to the top of the screen and the stored energy in T1 is transferred to boost capacitor C18. Capacitor C17 tunes the primary of T1 to the third harmonic of the line scan to improve efficiency. The line output supply is decoupled by inductors L3 and L4 and capacitors C30 and C31.

Supplementary power supplies

Five supplementary supplies are generated by T1 to provide higher voltages for the video amplifier and the CRT supply lines. The final anode and anode 2 supply of +12 kV comes from an overwinding on T1 which has an integral rectifier moulded into the assembly. This output is taken directly to the CRT through the red EHT lead and anode cap.

Rectifiers D9 and D16 provide a +475 V supply for anode 1 and anode 3 (focus) bias and conduct during line flyback. A +50 V rail is generated during flyback by rectifier D5 and smoothed by capacitor C22. This supplies the video amplifier.

+50 V is applied from C22 through diode D7 to add to 100 V which is generated through capacitor C21 when rectifier D8 conducts during the active line period. The +150 V so provided is smoothed by capacitor C23 and applied through the front panel INTENSITY control to the tube cathode.

A boost rail of +24 V is generated by an overwinding on T1, connected to pin 10, and smoothed by capacitor C18. This supplies +22 V to the RF synthesizer and oscillator board AA3 through resistor R34 and diode D13.

Video amplifier

Current on the VIDEO IN line from the VDU board AB3/2 is applied to the video amplifier TR1 and TR2 which has a gain of 15. The amplifier inverts and amplifies the signal to 38 V pk–pk with black level (beam cut-off) corresponding to +5 V.

Phase locked loop

The PLL causes the internal 10 MHz standard to be phase locked to an external 1 MHz standard which is connected to the EXT STD socket on the rear panel. The external signal is passed through buffer TR5 and TR6 to divider IC4 which produces 100 kHz. This is fed to IC3a pin 2.

The output from 10 MHz crystal oscillator OS1 is fed back and passed to divider IC5 which produces 100 kHz which is applied to IC3a pin 1 for phase comparison with the external signal.

Any resulting error signal is DC converted by a low-pass filter and fed to OS1 pin 5. The error signal is used inside OS1 to control a variable capacitance diode which adjusts the frequency of the crystal until it is in lock. Finally, the oscillator square wave output is buffered by gate IC3b.

CRT BASE BOARD AT2

See Fig. 7–38.

This assembly supports the CRT base socket and has spark gaps punched into it to protect the semiconductors on the CRT drive board AC1 in the event of a high voltage flashover.

If a flashover occurs within the CRT, the final anode capacitance is rapidly discharged through one of the CRT electrodes. The resulting voltage spikes are prevented from damaging the AC1 circuitry by a resistor and a spark gap at each electrode junction. The resistor presents a high impedance path to the spike while a low impedance path is presented by the spark gap when it is ionized. Thus, the discharge current is routed back to the external CRT coating. This prevents large currents from flowing through the CRT circuitry.

MICROPROCESSOR, DAC AND PROGRAMMABLE TIMER CIRCUITS

See Fig. 1–14.

On the microprocessor board AB4/2, there is an 8-bit data bus which is multiplexed with an 8-bit address bus to provide a 16-bit address. Besides controlling the major functions of the instrument, the microprocessor responds to interrupts from the GPIB and the main keyboard AF1/2 and the scope keyboard AF2/2 and senses the direction of rotation of the VARIABLE control.

The memory contains RAM for the latest instrument settings, EPROM for the operating system, EAROM for reference data and NOVRAM for the current setting. Loss of power from the power supply board AR1/1 is detected and the current setting is stored in non-volatile memory. Besides addressing the memory, the addresses are decoded to provide board and chip select signals to implement the various functions.

The data bus is supplied by an ADC for measurements of the voltmeter, power meter and demodulation inputs from the demodulation and scope board AB5/2. The data bus also communicates with a programmable divider which provides many of the timing and control signals for the instrument. Input and output data is controlled by means of a two-way buffer.

The frequency which is to be measured by the AF counter is connected from AB5/2 to the scope trigger on the VDU board AB3/2. It is then applied to a frequency comparator on AB4/2 and prescaled if it is above 1.2 kHz. It is then fed to the programmable divider together with a reference derived from the 10 MHz standard on the CRT drive board AC1. The reference is prescaled if the unknown frequency is below 800 Hz.

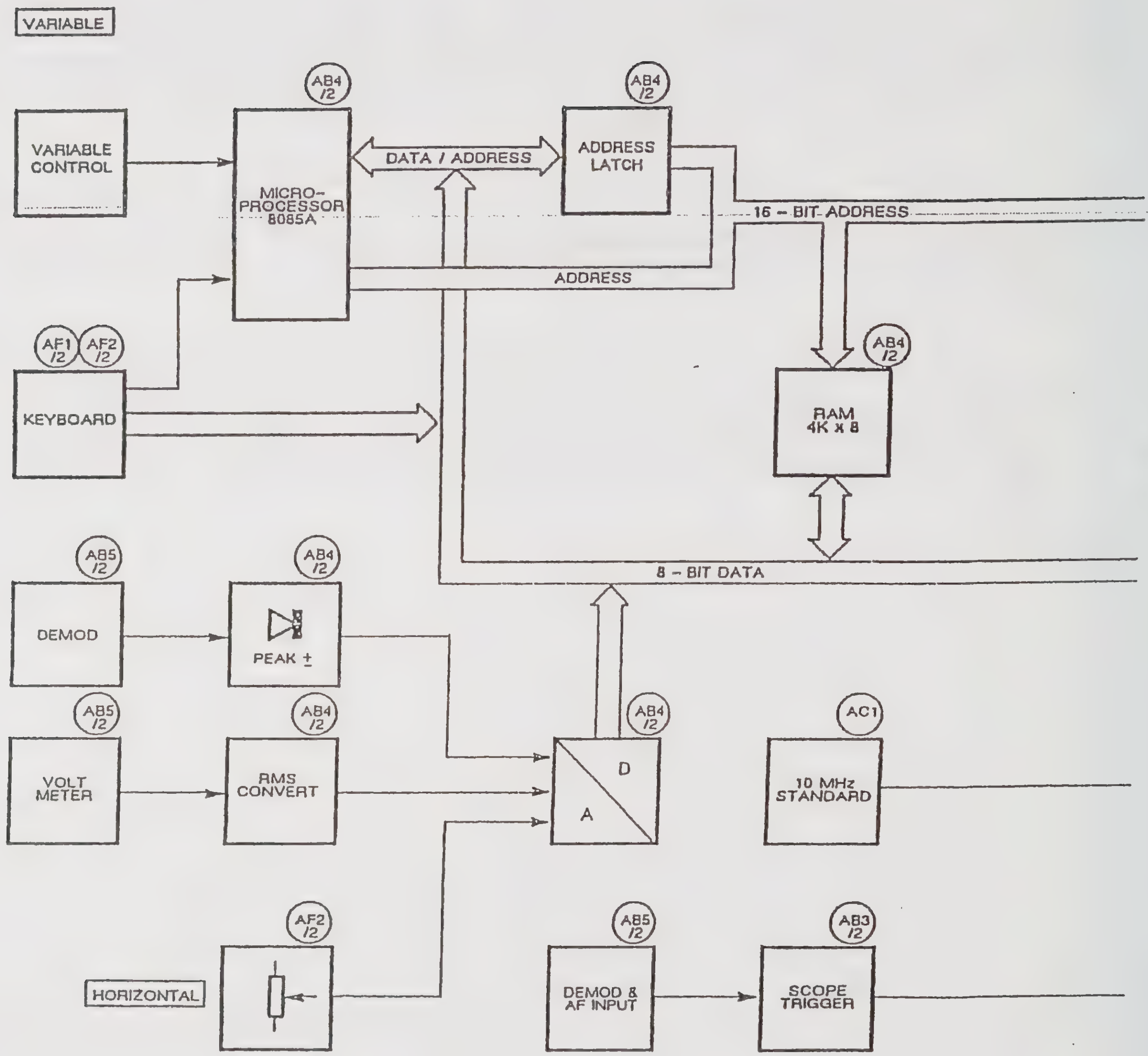
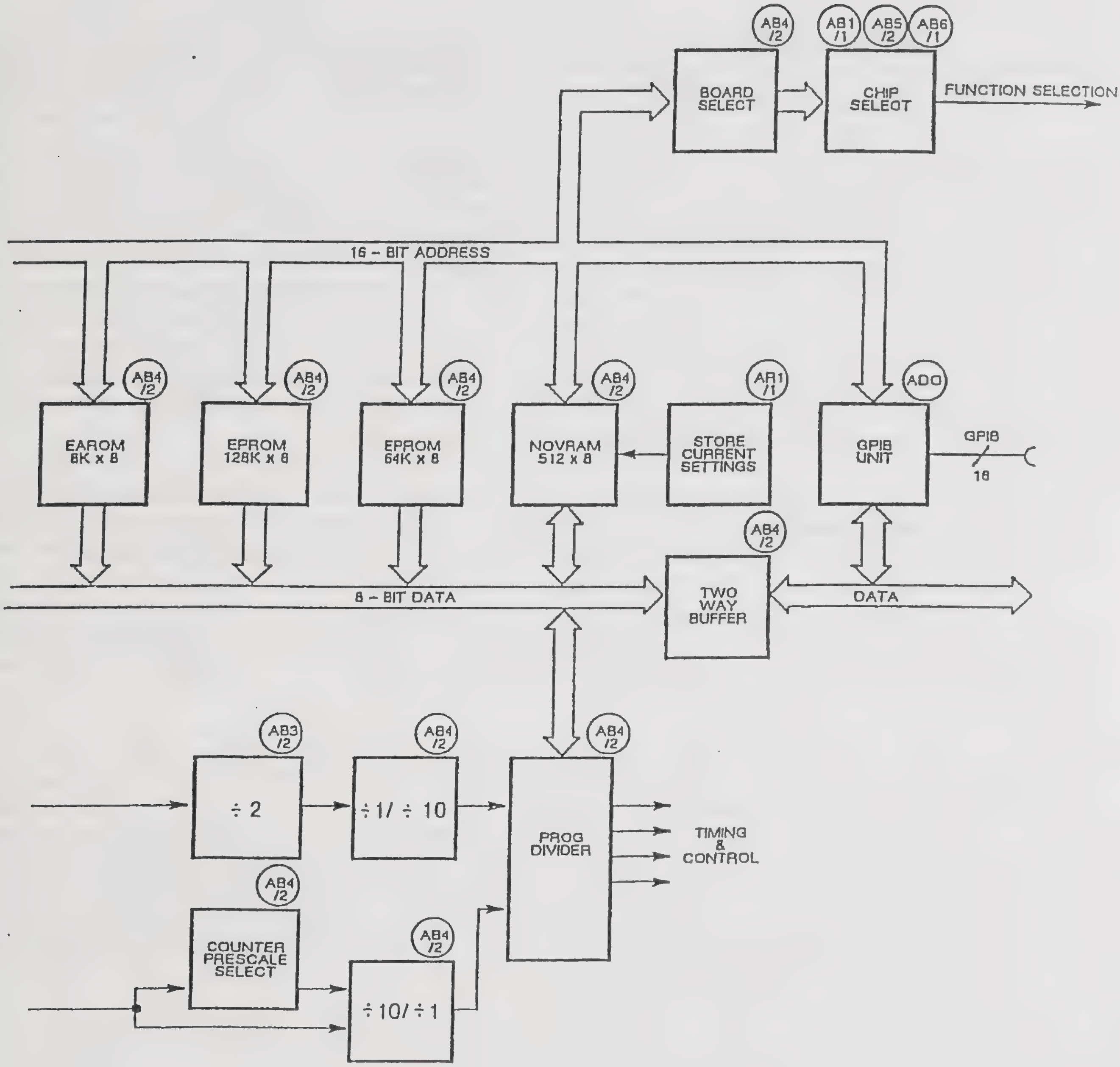


Fig. 1–14 Block diagram of microprocessor, DAC and programmable timer circuits


AB4 /2
AB1 /1
AB5 /2
AB6 /1
BOARD SELECT
CHIP SELECT
FUNCTION SELECTION
16 - BIT ADDRESS
AB4 /2
AB4 /2
AB4 /2
AB4 /2
AR1 /1
ADO
EAROM 8K x 8
EPROM 128K x 8
EPROM 64K x 8
NOVRAM 512 x 8
STORE CURRENT SETTINGS
GPIB UNIT
GPIB
16
AB4 /2
8 - BIT DATA
TWO WAY BUFFER
DATA
AB3 /2
AB4 /2
AB4 /2
÷ 2
÷ 1/ ÷ 10
PROG DIVIDER
TIMING & CONTROL
AB4 /2
COUNTER PRESCALE SELECT
AB4 /2
÷ 10/ ÷ 1

MICROPROCESSOR BOARD AB4/2

Board AB4/2 contains the microprocessor, memory, AD converter and programmable divider as well as the audio counter circuit. See Fig. 1-15.

Microprocessor

See Fig. 7-26.

Microprocessor IC1 is an 8-bit Intel 8085A which uses a multiplexed data bus to accommodate the 16-bit address. This is split between the 8-bit address bus and the 8-bit data bus. Output lines A8 to A15 carry the high order memory address. I/O lines D0 to D7 carry the low order memory address during the first clock cycle and then carry data during the second and third machine state clock cycles. I/O is memory mapped, i.e. the I/O devices are treated as part of the memory. The Address Latch Enable (ALE) line is used to differentiate between data and address. When it is taken high, the contents of the data bus are treated as part of the address and latched in IC2. The Write (WR) and the Read (RD) line asserted low enable the memory or I/O device selected by the address bus to be written into or read out from respectively. They also indicate that the data bus is available for the data transfer operation. X1 has a 5 MHz input which is divided internally to give the internal operating frequency. The Reset In (RST IN) line has a long time constant determined by R3 and C12 which ensures that all supply lines are stable when microprocessor operation commences. The Reset Out (RST OUT) line from the IC1 is used to reset the GPIB interface.

The Serial Input Data (SID) line is from D-type bistable IC29a whose data and clock inputs are supplied from the CONTINUOUS VARIABLE lines. These carry square waves which are phase-shifted ±90° relative to each other depending on the direction of rotation of the front panel VARIABLE control. The information on these lines is converted by IC29a to a level on pin 5 which is high to SID for clockwise. Pulses to IC28 pin 13 (TP6) show the speed of rotation. The Serial Output Data (SOD) line controls the gating of IC28 to determine whether the pulses cause a processor interrupt. (A high logic level here enables interrupts.)

The 8085A is configured with three edge-triggered interrupt input lines. In ascending priority order, these are RST 5.5, RST 6.5 and RST 7.5. RST 5.5 is used for interrupts from the GPIB interface. RST 6.5 interrupts are generated by positive-edge triggered D-type bistable IC29b. When a keypress is detected on AB1/1, the pin 1a clock input is taken high causing an interrupt. RST 7.5 is fed from switch IC27, whose inputs are from the tones timer, DTMF decoder or DCS line. When an interrupt occurs on one of the RST lines, the start address of the service routine is pointed to by the vector stored at the location which is 8 times the RST value, e.g. for RST 7.5 the vector is stored at 3C hexadecimal (60 decimal).

Analogue to digital conversion

See Fig. 7–27.

8–bit ADC IC3 operates by successive approximation. It is clocked at 250 kHz by the output from divider IC37 on Fig. 7-28. To minimize noise, the voltage reference for the V REF+ input is derived from the +12 V line using the Zener diode D6. There are eight analogue inputs for conversion. These are PEAK and TROUGH from the modulation meter section applied to IN0 and IN1 respectively, RMS VOLTS from the voltmeter section applied to IN2, and HORIZ SHIFT from the oscilloscope section applied to IN3. IN4 is connected to the output of the DCS filter. IN5 is not used. IN6 is from the Rx level from the sensitive receiver RX1 (when fitted) and IN7 is from the temperature sensor and from the sensitive receiver RX1 (when fitted).

Precision peak/trough detector IC30, supplied from the MOD +/– PEAK line, provides the PEAK and TROUGH voltages which are used for two of the barchart displays. IC32 converts the voltage on the VOLTMETER line to RMS to provide the RMS VOLTS input. The Write (WR) and Read (RD) signals from the microprocessor respectively supply the START and OE (Output Enable) inputs to the ADC. These are gated by IC34b and IC34c with a chip select signal from decoder IC18 on Fig 7–26.

To start the IC3 conversion process, a low from IC18 pin 4 opens the gates of IC34 ready for the WR pulse from the microprocessor. The rising edge of the pulse to the Address Latch Enable (ALE) input latches in the address on lines A0 to A2. The address is decoded and one of the eight analogue inputs is selected. See Table 4–7 for conversion. The same rising edge is sent to START which commences the voltage sampling process on the selected input and resets its output data latch. When it is ready to use the digitized output, the microprocessor sends an RD pulse to the Output Enable (OE) input which changes the output from a high to a low impedance state to enable the data to be read.

TABLE 4–1 ADC INPUT SELECTION LOGIC – AB4/2

Address C	B	A	Selected analogue input
L	L	L	IN0 – Peak
L	L	H	IN1 – Trough
L	H	L	IN2 – RMS volts
L	H	H	IN3 – Horiz shift
H	L	L	IN4 – DCS filter
H	L	H	IN5 – Spare
H	H	L	IN6 – Rx level
H	H	H	IN7 – Rx temperature

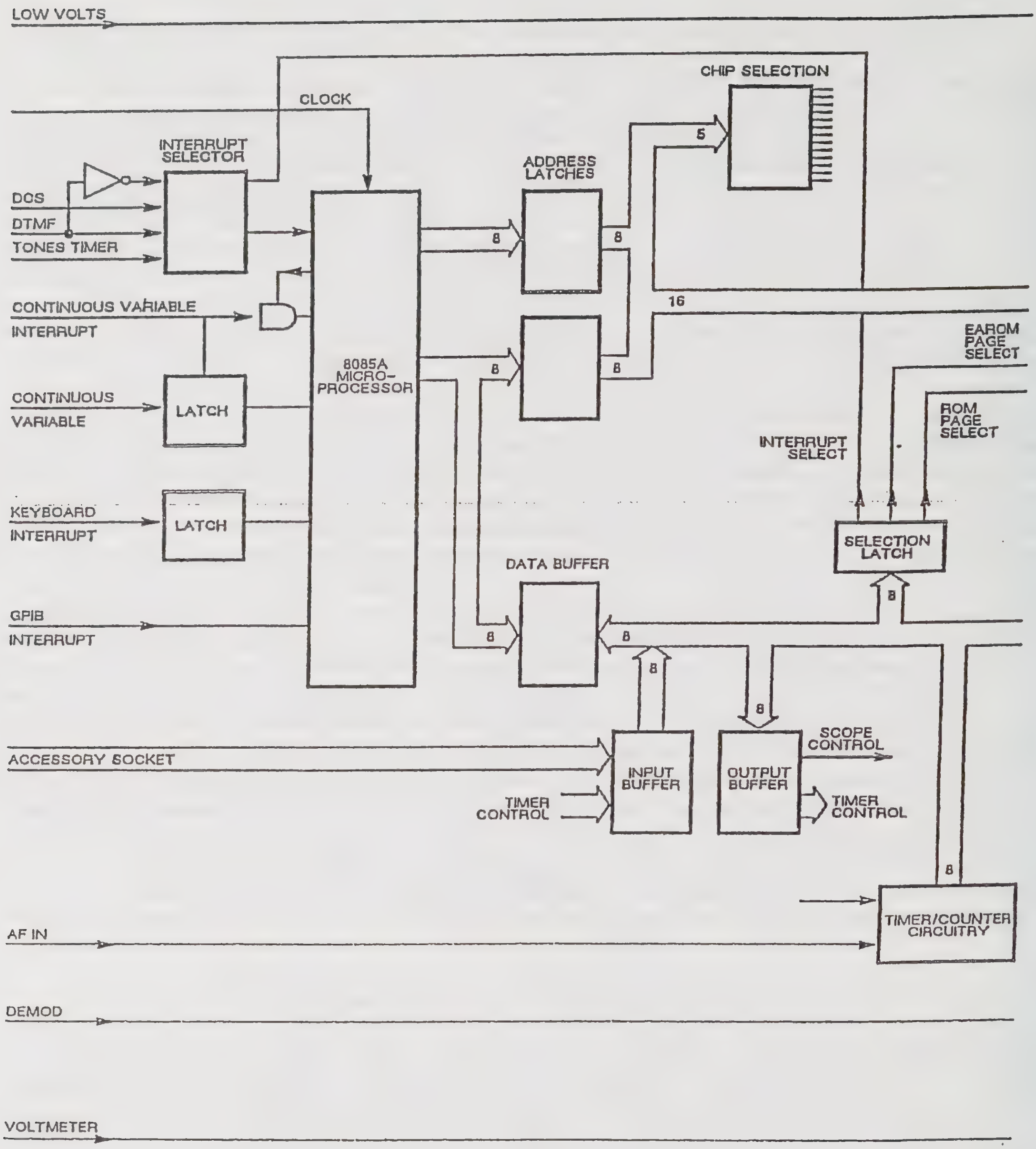
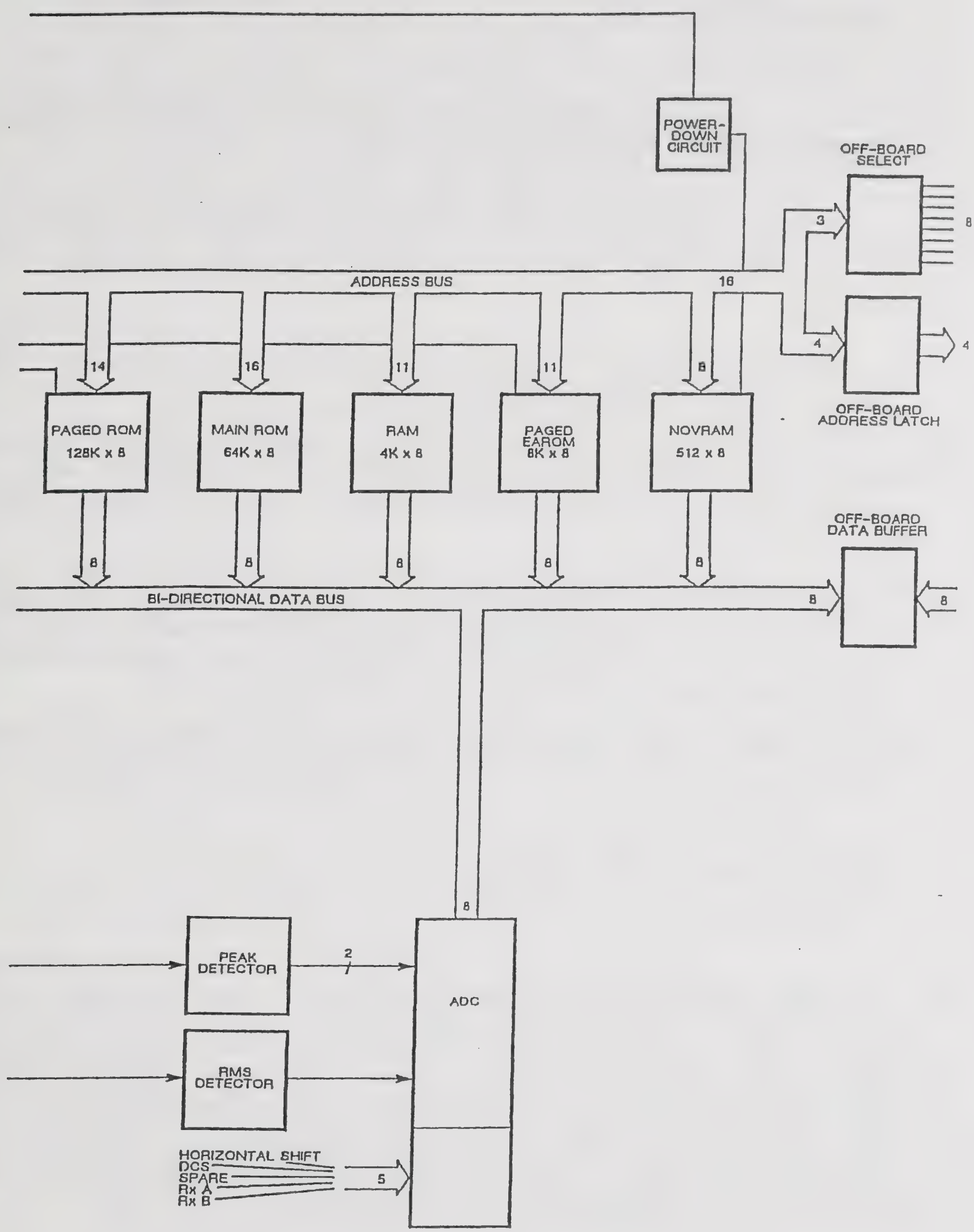


Fig. 1–15 Microprocessor board AB4l2


POWER-
DOWN
CIRCUIT
OFF-BOARD
SELECT
3
8
ADDRESS BUS
16
4
4
14
16
11
11
8
PAGED ROM
128K x 8
MAIN ROM
64K x 8
RAM
4K x 8
PAGED
EAROM
8K x 8
NOVRAM
512 x 8
OFF-BOARD
ADDRESS LATCH
OFF-BOARD
DATA BUFFER
8
BI-DIRECTIONAL DATA BUS
8
PEAK
DETECTOR
2
ADC
RMS
DETECTOR
HORIZONTAL SHIFT
DCS
SPARE
Rx A
Rx B
5

Programmable divider

See Fig. 7–28.

IC4 is a complex programmable divider which contains an internal prescaler and five programmable counters. The prescaler is supplied on pin 6 with 1 MHz derived by IC23b from the 5 MHz CLOCK board input.

Counter 1 controls the duration of the tones generated by the instrument. The 5 MHz CLOCK input to the board is fed to pin 33 and the output, from pin 3 to IC27 pin 4 on Fig. 7–26 is used as one of the two sources for the RST 7.5 processor interrupt signal.

Counter 2 produces a 100 ms, 400 ms or 1s gate pulse for the RF counter section. A 1 kHz signal from IC4 pin 7, derived from the prescaler, is fed to IC4 pin 32. Output to the counter is on the RF COUNTER GATE line.

Counter 3 measures the period of the unknown audio frequency. The reference frequency is fed in from data selector IC22b to IC4 pin 31 while the frequency to be measured is applied to IC4 pin 36 to gate the reference. The result is read over the data bus by the processor.

Counter 4 provides control for the oscilloscope horizontal shift. It produces a pulse on output pin 38 which is delayed relative to the frame sync input on pin 35. It does this by counting double frequency line sync pulses on the 2xLS line to input pin 30. The number of line sync pulses counted is controlled by the microprocessor according to the digitized value of the horizontal shift obtained from IC3 on Fig. 7–27.

Counter 5 provides a variable oscilloscope timebase by dividing a 2.5 µs period clock which is fed to IC4 pin 29. The timebase obtained is output from pin 37 on the SCOPE TIMEBASE line.

Audio counter and prescaler

See Fig. 7–28.

The AF counter works in period mode. The period to be measured is applied from contact 29b simultaneously to two frequency comparators. These are formed from two timers IC20a and IC20b and two D-type latches IC21a and IC21b. Transistors TR1 and TR2 discharge timing capacitors C28 and C29 at the start of each unknown period. The timers, effectively retriggerable counters, compare the unknown period with their own time constants and their output states at the end of each period are latched to provide steady levels for input frequency selection. These levels are fed back through low-pass filters R28 with C26 and R29 with C27 into the timers to provide a small amount of frequency hysteresis to eliminate jitter. Frequency selection is by IC22a and IC22b which select either an input prescaled by IC23a and IC23b or an undivided input.

The unknown frequency is a square wave whose falling edge triggers the timers and whose following rising edge clocks the latches. If the period of the unknown frequency is shorter than the timer periods (indicating a high unknown frequency) the latches will take their Q outputs high causing the prescaled inputs to be selected. The faster timer IC20b increases the accuracy of measurement of high frequency unknowns. If the unknown is higher than approximately 1.2 kHz, IC21 pin 9 is high causing IC22a to select unknown divided by 10. The slower timer IC20a prevents counter IC4 from overflowing on long periods. If the unknown frequency is lower than approximately 800 Hz, the output of the latch IC21 pin 6 is high causing data selector IC22b to select 500 kHz from IC23b instead of 5 MHz as the reference for counter IC4.

Memory

See Fig. 7–26.

The main operating system is contained in EPROMs IC9 and IC10 which provide a total of 192 kbytes of memory. As the total addressable area of the microprocessor is only 64k (16 address lines, 2^{16} = 65,536), two-thirds of the total memory space is paged, i.e. eight memory areas sit at the same address but only one is selected at any one time. This is achieved by a complex chip select scheme using IC5 and IC12.

IC13 is an 8 kbyte EAROM (Electrically Alterable ROM) which is also paged – 4 pages of 2 kbytes. It contains reference data such as calibration look-up tables, a maximum of 26 instrument settings saved using the STORE key and all the set-up information which is entered under the parameters menu.

IC16 is a 32 kbyte RAM (Random Access Memory) in which is stored the latest instrument settings for each of the various modes (TX TEST, RX TEST, DUPLEX etc.) as well as holding scratchpad read/write information. Only 4 kbytes of the RAM is addressable by the microprocessor.

IC14 is a 512 byte NOVRAM (Non-Volatile RAM) which holds the current front panel settings. It functions in a similar way to a normal RAM but with an additional EAROM in the same package. With the Non-Volatile Enable ($\overline{NE}$) line high, the device functions as a normal RAM. When the $\overline{NE}$ line goes low, the contents of the RAM section are transferred into the EAROM part of this chip.

In normal operation, the Low Volts line (LV) from the power supply is low. This causes data selector IC31 to select pins 2, 5, 11 and 1 onto 4, 7, 9 and 12 respectively. This means that $\overline{CS}$, $\overline{OE}$, $\overline{WR}$ and $\overline{NE}$ to the NOVRAM are controlled from the microprocessor. With LV low, TR3 is off and thus the local supply to IC14 and IC31 is maintained through D7 from the common 5 V rail. At power down, the low volts driver on AR1/1 goes open collector and LV is pulled high by R37. This line is connected to IC31 pin 1 and when it goes high, pins 3, 6, 10 and 13 of IC31 are selected. This causes NE, CS and WR to the NOVRAM to go low and OE to go high. With LV high, TR3 is on and thus the local supply for IC14 and IC31 is maintained at 5 V through TR3 from the +12 V rail. This provides an extra 60 ms in which a store cycle can be completed.

Data direction control

See Fig. 7–27.

The direction of data flow between the microprocessor data bus and the quiet data bus is controlled by two-way tristate buffer IC7. This is enabled by a low from decoder IC18 to IC7 pin 19. Data direction is determined by the logic state of RD to pin 1. For a read operation, this line is taken low. The buffer prevents microprocessor activity from spilling over onto the quiet data bus and causing analogue interference.

Selection signals

See Fig. 7–28.

BS3 for board AB5/1 provides the RMS TIME TRIGGER signal to IC36 on Fig. 7–26. Since a board select signal to AB5/1 usually involves a voltmeter range change, IC36 is triggered to produce a low delay pulse to IC26. The delay allows time for the RMS converter output to settle.

MAIN KEYBOARD AF1/2

See Fig. 7-42.

There are forty-nine push-button keys on this assembly. They are used to control most of the functions of the instrument. They are arranged in a matrix of rows labelled 1 to 8 and columns labelled A to H. The columns are driven from an octal latch on the motherboard AB1/1 and the rows are received back onto AB1/1.

LEDs D1 to D5 are used to indicate modulation and input socket selection and are fed from driver IC1. They are controlled from AB1/1 using five column lines shared with the keyboard. In operation, AB1/1 first takes the appropriate column line high to IC1 and then turns the selected LED on by strobing the CLK line.

SCOPE KEYBOARD AF2/2

See Fig. 7-43.

On this assembly, there are six push-button keys to control the operation of the oscilloscope and four potentiometers. The keys are connected into the same matrix as the main keyboard AF1/2.

The INTENSITY potentiometer R1 is connected to the CRT drive board AC1 in order to vary the cathode bias of the CRT and thus the brightness of the raster.

The VOLUME control R2 is connected to AB1/1in order to control the gain of the audio power amplifier.

The oscilloscope horizontal and vertical POSITION controls R3 and R4 are also connected to AB1/1. R3 controls the time delay which is introduced by counter number 4 on the microprocessor board AB4/2. R4 varies the bias of the scope ranging IC on the demodulation and scope board AB5/2.

POWER SUPPLY CIRCUITS

See Fig. 1–16.

The power supply board AR1/1 selects its input from either an AC supply after rectification or from an external DC supply through the filter board AR4. When both AC and DC are connected, the AC is selected to supply the power. If the AC supply fails, the DC supply is automatically selected without any interruption of the instrument operation. Selection is not made if the DC polarity is incorrect.

A 10 V regulator supplies the switched mode power supply controller through a soft start circuit which limits current surge at switch-on. The supply current is monitored so as to shut down the controller for an overload. Controller operating frequency is locked to the 10 MHz standard from the CRT drive board AC1. An under–voltage detector enables the front panel settings to be saved by the microprocessor board AB4/2 in the event of a power failure. The resulting DC outputs are ±5 V and ±12 V with the +12 V line supplying a controlled drive for the fan.

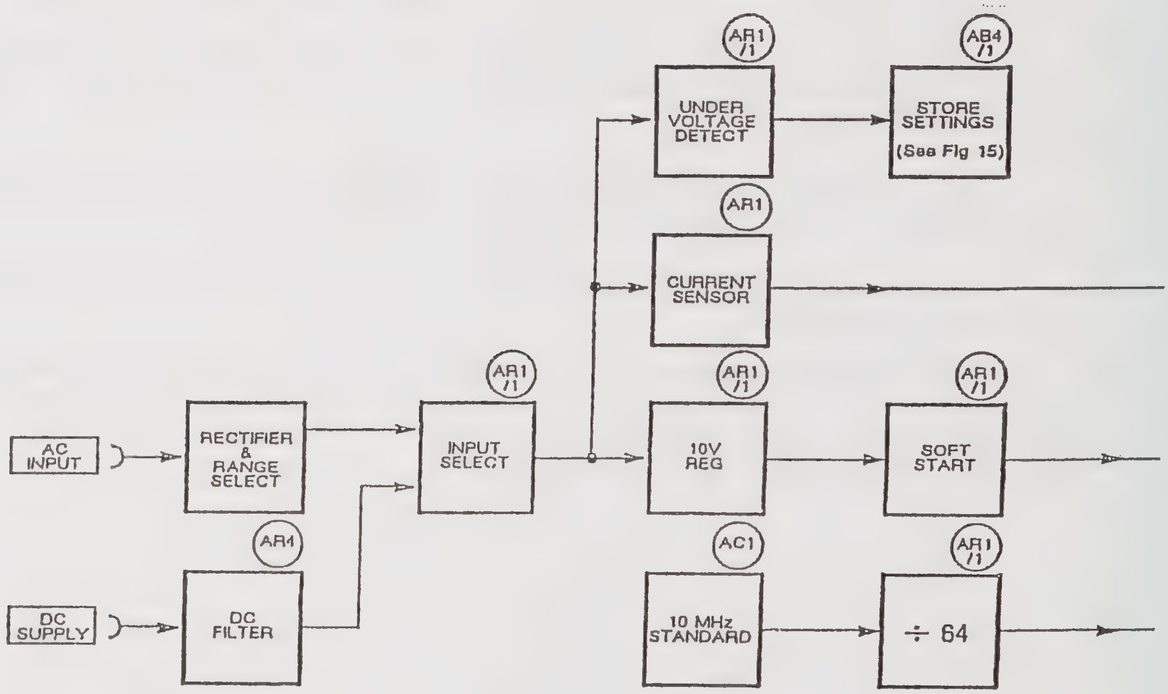
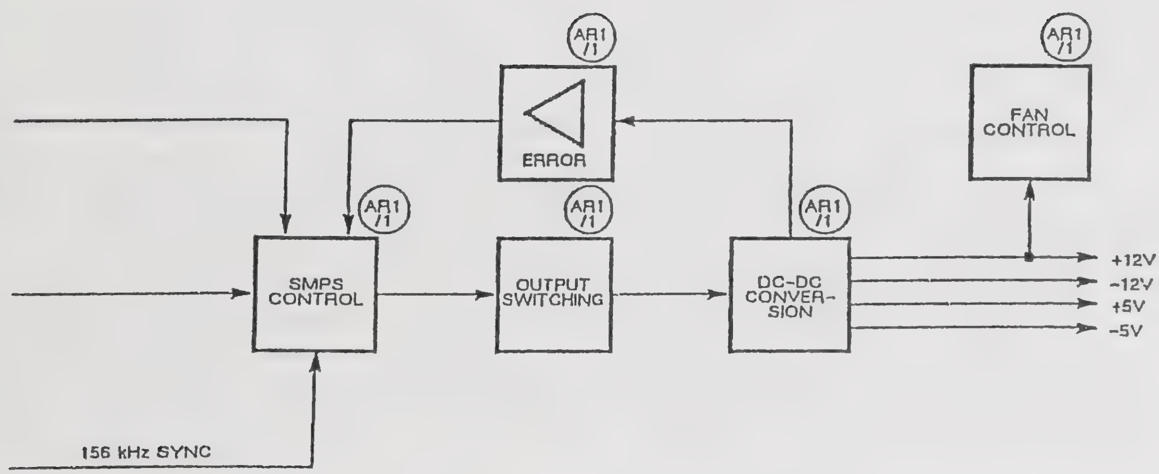


Fig. 1–16 Block diagram of power supply circuits


AR1 /1
ERROR
AR1 /1
FAN CONTROL
AR1 /1
SMPS CONTROL
AR1 /1
OUTPUT SWITCHING
AR1 /1
DC-DC CONVER-SION
+12V
-12V
+5V
-5V
156 kHz SYNC

POWER SUPPLY BOARD AR1/1

See Fig. 7–45.

The power supply unit is a switched mode type which operates from either AC or DC. On the rear panel, there are a transformer, rectifier and smoothing capacitors which reduce the AC input to 24 V DC before supplying the PSU. Outputs from the PSU are on regulated ±12 V and ±5 V lines which are isolated from the DC input.

Input power selection

When the instrument's SUPPLY switch is set to ON with only external DC connected, the current on the ON/OFF SW line through diode D29 to capacitor C29 is sufficient to energize relay RLA. It is then held in by the current through resistors R48 and R49. This selects the input on the EXT DC line. Diode D28 across the coil of RLA ensures that this selection is not made if the DC is applied with the incorrect polarity. If a DC input of greater than 34.7 V is applied, Zener diodes D11 and D12 conduct thereby switching the relay to the INT DC line and so protecting the PSU.

When AC supply is also connected, the rectified input on the INT DC line through resistor R52 switches on transistor TR19. This causes transistor TR18 to switch off which removes the drive to RLA and power is then supplied on the INT DC line from the transformer, rectifier and smoothing capacitors.

Power supply unit

Series regulator TR2, TR3, TR4 and TR5 provides for controller IC1 and supplies the drive for output switching transistors TR13 and TR16. TR3 and TR4 form a Darlington pair. TR2 amplifies the output from TR3 to provide the base drive for series pass transistor TR5. Potential divider R7, R46 and R8 across the regulator output causes the output voltage to be sampled by the base of TR4.

When the DC input falls below 8.5 V, the sampled voltage is reduced so that TR4 is switched off. TR3 is clamped by Zener diode D1 so that current still passes through this transistor. TR6 is switched off by TR4, which takes the base of pnp TR9 low so that it switches on. This connects the dead time pin of IC1 to the reference which switches off IC1.

When the DC input falls below 10.8 V, the voltage drop across TR5 is reduced below the Vbe of transistor TR1 which turns off. The Vbe is preset by R46. A signal is then sent through opto-coupler IC4 to the microprocessor board AB1/1 on the LOW VOLTS line so that the front panel settings can be saved in anticipation of a complete failure of the DC supply.

Timing components C6, R67 and R17 set the internal oscillator of IC1 to free run slightly higher than 156 kHz. After the instrument has been switched on and the 10 MHz crystal reference on CRT drive board AC1 has started, the 10 MHZ CLK input is fed to dividers IC2a and IC2b to produce 156 kHz which is applied through isolating transformer T3 to transistors TR7 and TR8. These form a latch which turns on at every cycle of the divided reference. This connects R17 to earth.

IC1 mirrors the timing resistor current into C6 which charges to a threshold determined by IC1. IC1 then discharges C6 and the resulting pulse through C5 turns off the latch to await the next cycle of the divided reference. In this way, the frequency of the PSU is locked to the crystal oscillator. Thus, interference frequencies generated by the PSU are predictable. Capacitor C10 and resistor R19 provide a soft start which limits the line surge current at switch-on.

IC1 provides two non-overlapping complementary square waves, on pins 11 and 8, to driver transistors TR11, TR12, TR14 and TR15. These provide the drive which is necessary for the highly capacitive gates of FETs TR13 and TR16 which are connected to transformer T1. The purpose of diodes D7, D8 and D9 and capacitor C25 is to clamp the drains of TR13 and TR16 to 75 V.

For ±12 V, the square waves from the appropriate secondary of T1 is rectified by diodes D14, D15, D16 and D17 and then smoothed by inductive-capacitive filter L1 with C19 and C18 and filter L3 with C17 and C16. The -12 V rail has clamp diode D25 to prevent overvoltage in the event of a no-load condition.

For ±5 V, the square waves from the appropriate secondary of T1 is rectified by Schottky diodes D18, D21 and D22 and then smoothed by inductive-capacitive filter L5 with C24 and C23 and filter L7 with C22 and C21. The -5 V rail has clamp diode D24 to prevent overvoltage in the event of a no-load condition.

The +12 V and +5 V rails are stabilized as a pair. They are fed to resistors R41 and R42 whose average voltage is compared by amplifier IC5 with a reference voltage from Zener diode D31. The resulting error signal is fed through opto-coupler IC3 into the error amplifier of IC1. Capacitors C15 and C13 and resistor R39 are for frequency compensation. Capacitor C30 and resistor R58 are hum-bucking.

The supply current is monitored by transformer T2. The output from T2 is added to the supply voltage with potentiometer R34 and R35 in such a way as to approximate the product of current and voltage to monitor the supply power. Regardless of the applied external voltage, if the PSU is overloaded by more than 20%, the voltage on IC1 pin 16 becomes equal that on pin 15. This shuts down the PSU until it is producing approximately 120% of its nominal output of 44 W.

Fan supply

The +12 V rail is connected to diodes D33, D27 and D26 which conduct while the fan is drawing stall current. When the fan starts running, the current through the diodes ceases and it flows instead through resistor R57.

DC FILTER BOARD AR4

See Fig. 7-37.

This assembly is supplied only with Option 6.

This assembly prevents any noise which is generated by the switched mode power supply from feeding back to the rear panel DC SUPPLY socket. The filtering is wide band. Low frequencies are suppressed by capacitor C1 and the high frequencies are suppressed by inductive-capacitive filter L1 with C4 and C3 and filter L2 with C5 and C2.

SENSITIVE OFF-AIR RECEIVER

When Option 1 is fitted, the 2955B contains a Sensitive Receiver and appropriate switches.

See Fig. 1-17. This shows how the Sensitive Receiver and its switches connect with the basic instrument.

The circuits of the Sensitive Receiver are carried on printed circuit boards RX11 and RX12. These are housed in a separate vertical tray which is mounted adjacent to the input switch and attenuator assemblies.

When TRANSMITTER MONITOR mode is selected, the input signal from the RF IN/OUT connectors is routed through bypass switch assembly RX3 to the Sensitive Receiver. To provide the local oscillator during this mode of operation, the output from the RF signal generator is routed through attenuator and switch assembly RX2 and local oscillator driver board RX12 to the mixer in the Sensitive Receiver.

The incoming signal is converted to an IF of 21.4 MHz. When the local oscillator frequency is set above 21.4 MHz, reception can be obtained at two frequencies which are separated by twice the IF. In order to prevent interference from an unwanted signal, the local oscillator can be set so that the unwanted frequency is either above or below the wanted signal. To do this, the RF IMAGE is set as UPPER or LOWER as described in the Operating Manual.

The receiver IF output is levelled by the use of an AGC loop. The magnitude of the AGC control voltage is proportional to the signal strength and provides the level which is shown on the display.

To extend the receiver's dynamic range, a 0/10 dB attenuator and a 0/32 dB amplifier are included. Three different gains are available – with the 0/10 dB attenuator at 0 and the 0/32 dB amplifier at +32 dB (range 0), with both the 0/10 dB attenuator and the 0/32 dB amplifier at 0 (range 1) and with the 0/10 dB attenuator at −10 dB and the 0/32 dB amplifier at 0 (range 2). On reception of a signal within the operating range, the gain is automatically set appropriately. An internal calibration routine improves the accuracy of the displayed measurement.

Two IF filter bandwidths can be set as described in the Operating Manual. In addition to improved selectivity, the narrower filter gives enhanced sensitivity.

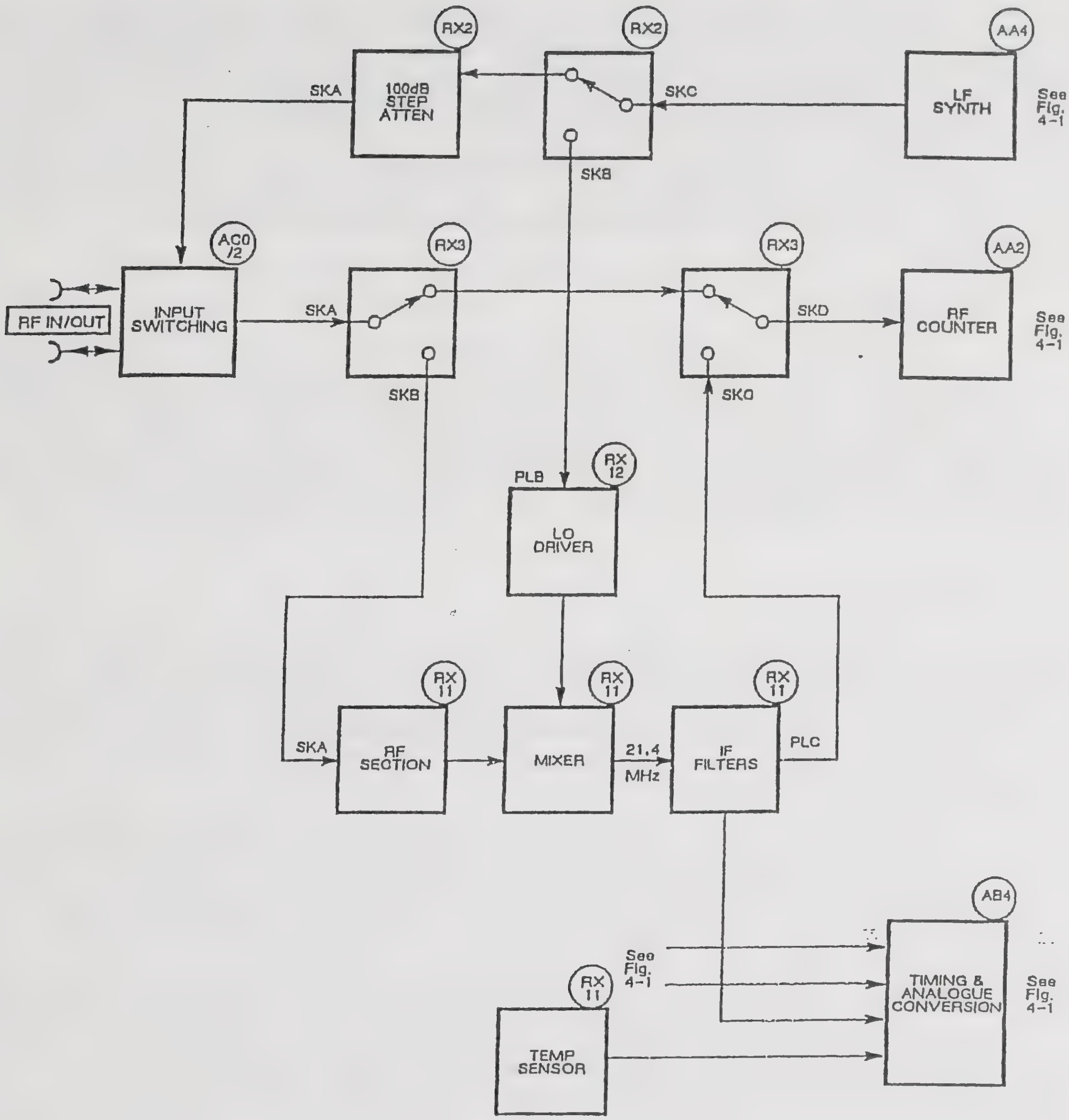


Fig. 1-17 Block diagram of the Sensitive Receiver

SENSITIVE RECEIVER BOARD RX11

See Fig. 7-48.

This board receives the signal from the RF IN/OUT connector on the front panel. After amplification, the input signal is mixed with the output from the RF signal generator to produce an IF of 21.4 MHz. This output is levelled by means of an AGC loop and the control line is used to indicate signal strength.

To extend the receiver operating range, there are two gain blocks - a 0/10 dB RF attenuator and a 0/32 dB IF amplifier. Control circuits select, as required, IF bandwidth, 0/10 dB attenuator, 0/32 dB amplifier and local-oscillator notch filter.

RF section

The RF input signal is routed to 0/10 dB attenuator R1, R2 and R3 which is controlled by contacts RLA. The output from the attenuator is fed through 20 dB amplifiers IC1 and IC2 to double balanced mixer IC3. The local oscillator drive for the mixer is fed from the local oscillator driver board RX12. To improve performance of the mixer, its IF port is terminated by 3 dB attenuator R6, R7 and R8. This is followed by 100 MHz LP filter L5, C7, C8 and C9 to remove unwanted frequencies.

IF filters

The IF signal is fed through transformer T1 to the base of amplifier TR1 which recovers the voltage loss of IC3. Then, two identical tranformers are used as a wide-band filter. These are buffered from each other by 20 dB amplifier TR2. Adjustment of the resonant circuits is made on preset capacitors C15, C18, C27 and C31. The output from the second transformer is fed through emitter-follower TR3 to give a low output impedance to one of two routes.

When wide-band filtering has been selected, contacts RLC and RLB are open so that the signal is routed through diodes D1 and D2 to the input of amplifier IC5. These diodes are forward biased to prevent signal break-through around crystal filter IC4. The low-pass filter C39, L11 and C41 improves the out-of-band rejection of the wide-band filter.

When narrow-band filtering has been selected, RLC and RLB are closed so that the signal is routed through transformer T2 to IC4 with D1 and D2 reverse biased. T2 converts the driving impedance to give a correct termination for IC4. The output from IC4 is fed through emitter-follower TR4 to give a low output impedance.

0/32 dB IF amplifier

The signal from RLB is fed to the junction of diodes D3 and D4. For 0 dB, diodes D4 and D6 are forward biased and diodes D3 and D5 are reverse biased. Thus, signals are directly routed to resistor R43. For 32 dB, D3 and D5 are forward biased and D4 and D6 are reverse biased. Then, the signal is fed through amplifier IC5 to R43.

AGC loop

The signal across R43 is applied to gain-controlled amplifier IC6 which is followed by further amplifiers IC7 and IC8. The IF output is fed to the bypass switch assembly RX3 and and to peak-detector D7. Compensation for any temperature drift in the characteristics of D7 is provided by diode D8 which is in the circuit of buffer IC9a, D7 and D8 being a matched pair. The detected signal is then fed through 50 Hz low-pass filter IC9b, loop filter IC9a and current-driver IC9c. The action of the loop, over the operating range of the Sensitive Receiver, is to maintain a reference voltage of 6.2 V into IC9a in order to produce a constant IF output of 0 dBm at IC8.

A separate output from the control line is provided by buffer IC10d. This output is used to display received signal strength.

Temperature sensor

To compensate for any drift characteristic of receiver gain, the temperature is monitored. The output from temperature sensor IC11 is fed through amplifier IC10c to give a suitable level for the calibration routine in order to maintain the accuracy of the signal strength measurements.

Control logic

For the 0/10 dB attenuator, 0 V on connector PLA contact 1 lowers the base voltage of transistor TR6 causing it to conduct and energize relay RLA. This switches the attenuator into its 0 dB position.

For the IF filter bandwidth, 0 V on PLA contact 9 lowers the base voltage of transistor TR7 causing it to conduct and energize relays RLB and RLC thus switching the IF signal through the filter. The high voltage to the inputs of amplifiers IC10a and IC10b causes the output to reverse bias diodes D1 and D2 thus isolating the filter.

For the 0/32 dB amplifier, 0 V on PLA contact 13 to the input of IC10b causes the output to go high. This causes diodes D3 and D5 to be to be forward biased (thus switching the IF signal through the amplifier) and diodes D4 and D6 to be reverse biased (thus isolating the bypass route around the amplifier).

Relays in the attenuator and switch assembly RX2 are connected to PLA contacts 15 and 16 so that they are energized by a positive voltage pulse when the base and the emitter of transistors TR10 and TR8 and the base of transistors TR11 and TR9 are taken for a short time to 0 V from PLA contacts 10 and 11.

Relays in the bypass switch assembly RX3 are connected to PLC contacts 1 and 2 so that they are energized by a positive voltage pulse when the base and the emitter of transistors TR14 and TR12 and the base of transistors TR15 and TR13 are taken for a short time to 0 V from PLA contacts 3 and 7.

For the notch filter, a relay on the local oscillator driver board RX12 is connected to PLC contact 6 so that it is energized by a positive voltage pulse when the base of transistor TR5 is taken for a short time to 0 V from PLA contact 5.

LOCAL OSCILLATOR DRIVER BOARD RX12

See Fig. 7-50.

When the Sensitive Receiver is selected, the RF generator output is fed into this board. Amplifier IC1 is used to give the correct level for the mixer on RX11. The signal to IC1 is fed direct or through a notch filter C1 to C5 and L1 to L4 (which are variable to enable the filter response to be optimized). The filter is tuned to the IF and is connected by relay RLA when the input frequency is above the IF. This filter prevents noise which is generated in the RF generator system around 21.4 MHz leaking across the mixer into the IF system.

ATTENUATOR AND SWITCH ASSEMBLY RX2

This consists of four sections. Three sections give 40, 40 and 20 dB attenuation for the normal RF generator output to the RF IN/OUT connectors. The relays which connect the pads have centre-tapped windings. One end is pulse-driven to switch in and the other end to switch out. All sections have a latching action and remain indefinately in one state until pulsed to the other. The fourth section is used to route the RF generator output through RX12 to the mixer on RX11 or to the attenuator sections.

BYPASS SWITCH ASSEMBLY RX3

This consists of two change-over switch sections which are identical to that in RX2. One section is used to route the signal from the RF IN/OUT sockets to the input of RX11 or to the modulation meter input on AA2. The other section is used to route the IF output from RX11 to the modulation meter input on AA2.

GPIB INTERFACE UNIT AD1

See Fig. 7-41.

This assembly contains controller IC3 which provides communication between the instrument and the GPIB. IC3 is a talker/listener which implements all the necessary GPIB functions for the instrument in conjunction with transceivers IC4, IC5, IC6 and IC7 and address reader IC2. IC3 is controlled by the microprocessor and has capabilities which include data transfer, handshake protocol, talker/listener address recognition, service request and serial poll.

Switch bank SW1 is used to enter the GPIB address. Five of the switches set the address in binary format (1, 2, 4, 8, 16) for the talk and listen modes. The sixth switch is set for the talk only mode. The switches configure the address in negative logic – when a switch is open, one of the pull-up resistors R1 to R6 holds the input high at logical '0' and, when a switch is closed, the input is connected to earth for logical '1'. IC2 is tristate-gated so that, when it is enabled by lines CS and A3 both being taken low, the switch settings are placed on the D0 to D5 inputs to IC3 for address recognition purposes.

IC3 takes care of data transfer in addition to decoding control messages. Control messages and addresses are passed onto the data bus by means of the handshaking process with ATN asserted by the controller to differentiate them from data. Control messages such as SPE, SPD (for serial poll) are decoded and the function is carried out.

IC3 also performs address recognition. During this phase, the data on lines DIO1 to DIO5 is compared for equality with the data on lines AD0 to AD4 lines from IC2. When a possible address is recognized, and providing certain other conditions are satisfied, the data on lines DIO6 and DIO7 is decoded to determine whether the instrument is being addressed as a talker or a listener.

When the instrument is designated a talker by the controller, data is transferrred from the microprocessor by means of a talk handshake to the listeners. This is sent through an internal register to the transceivers which are configured to send.

When the instrument is designated a listener by the controller, and provided SW1 is not set to the talk only mode, data is received through the transceivers which are configured to receive by means of the listen handshake and stored in an internal data register.

IC3 contains sixteen read/write registers (eight read, eight write). Two are for data transfer and the rest for interface control, status etc. Address lines A0, A1 and A2 from motherboard AB1/1 are used to select the required internal read/write register in conjunction with lines WR and RD. When line A3 is taken high and line CS is taken low, decoders IC1a and IC1b take input CS low which enables reading to or writing from the selected register. The interrupt request output INT is connected to the RST 5.5 input of the microprocessor and is taken high for request.

Data flow to and from peripherals and controller is through transceivers IC4, IC5, IC6 and IC7 with the direction of data transfer controlled by output T1/R1 being taken high for outputs and low for inputs. Additionally, T1/R1 is used for the handshake process. For example, a low, after inversion by gate IC1c, enables the listener signals NRFD and NDAC to be taken low on the bus while reinversion by gate IC1d ensures that the complementary DAV talker function is simultaneously disabled.

The only function of T2/R2 is to set bus management line EOI low for reception or high for transmission.

Chapter 2

MAINTENANCE

INTRODUCTION

This chapter provides servicing support information for the following:

(a) Operating Manual: Chapter 6 'Acceptance Tests' – Procedures for verifying that the equipment complies with the Performance Data.

(b) Maintenance Manual: Chapter 3 'Adjustment and Calibration' – Procedures for restoring the equipment to peak performance.

(c) Maintenance Manual: Chapter 4 'Initial Repair' – Procedures for dealing with a dead instrument.

(d) Maintenance Manual: Chapter 5 'Fault Diagnosis' – Procedures for finding defective modules and components.

SAFETY PRECAUTIONS

Although this equipment has been designed and constructed in accordance with international safety standards, it is important that the advice given under 'PRECAUTIONS' at the front of this manual should be observed in all maintenance procedures to ensure safe working practices.

TEST EQUIPMENT

Recommended test equipment is listed in Table 2–1. Alternative equipment can be used provided it complies with the stated minimum specification.

When more than one example is given for a particular type of equipment, tests are written around the first example. However, a test can be carried out using another example with very little or no change in the procedure.

ACCESS TO BOARDS AND UNITS

Removal of case

The case has two covers. Each cover is secured by four M4 countersunk self-tapping screws which are located at the sides. The covers are slightly sprung. Press at the sides to remove them from the grooves in the side plates. When refitting, ensure that the ventilation holes in the lower cover are at the front and that the covers are fitted into the grooves.

Boards AA1, AA2, AA3 and AA4/1

These are contained in the RF tray which is fitted to the underside of the instrument. There are covers which can be taken off after removing all the visible screws. Boards AA1 and AA2 are under the small cover. Boards AA3 and AA4/1 are under the large cover.

When refitting a cover, ensure that all gaskets are refitted correctly.

To remove AA3 or AA4/1, remove the soldered link which is between them. To remove any of these boards, unscrew the hexagonal pillars and nuts as necessary.

TABLE 2-1 RECOMMENDED TEST EQUIPMENT

Description	Minimum specification	Example
Spectrum Analyzer	Frequency range: 0.4 – 1000 MHz <3 Hz p-p residual FM, IF output at 47 MHz.	Marconi 2383
Power Meter & Sensors	Frequency range: 0.4 – 1000 MHz Power measurement range: –65 to +20 dB Accuracy: better than 0.15 cB	Marconi 6960A, 6912 & 6920 Sensors
Modulation Meter	AM measurement: 1.5 – 400 MHz FM measurement: 0.5 – 100 MHz AM accuracy: 1% at 1 kHz rate, 2.5% at rates 50 Hz – 15 kHz FM accuracy: 2% D-mod output: 0.3–3.4 kHz weighted filter	Marconi 2305
Distortion Meter	0.2% distortion accuracy	Marconi 2331A or HP 8903B Audio Analyzer
Frequency Counter	Frequency range: 0.4 – 1000 MHz 1 MHz Std. O/P	Marconi 2435 or Marconi 2440
Synthesized LF Generator	20 Hz – 20 kHz sine and square level 0 to 2 V RMS 1 MHz Std. O/P	HP 3325A or B
DVM	20 Hz – 20 kHz, 0.02% accuracy RMS DC measurement down to 1 mV	Datron 1065A or Solartron 7150+
Counter/Timer	50 Hz – 15 kHz, accuracy better than 0.005 Hz	Marconi 2438 or Philips 6654C
Audio Analyzer	Sinad measurement psophometric filter	HP 8903A or B
AC/DC Calibrator	DC 0 – 100 V, AC 1 kHz, level accuracy better than 0.05%	Rotek 3950
Signal Generator	Synthesized freq.: 1.5 – 1000 MHz, 1 MHz Std. O/P. RF level: 13 dBm FM: 0 – 25 kHz deviation AM: 0 – 90% Ext. mod. 50 Hz – 10 kHz, Ext. Std. I/P	Marconi 2019A
Power Splitter	6 dB splitter, 50 Ω 1.5 – 400 MHz	HP 11667A
RF Power Source	Overall uncertainty of 2% up to 500 MHz, 3% up to 1000 MHz	See RF Power Perform. Check
Standard Frequency Source	Frequency accuracy better than ±5 parts in 10^{10}	Rubidium or Caesium ref.
Oscilloscope	100 MHz dual channel	Tektronix 2235
Power Supply	Capable of supplying 55 W at 11 V	Coutant LB1000.2 or Farnell L12/10C
50 Ω termination	50 Ω ±1% 1/2 W	Suhner

Board AB1/1

This is the motherboard which can be seen under the card frame when the top cover is removed.

To gain access to the underside of AB1/1, the RF tray is hinged so that it can be opened out. Remove the upper of two screws at the rear and the screw at the front from both sides while supporting the tray. Pull off the Conhex connectors at the front and then hinge the tray open slightly to withdraw connector PLF. open the tray out fully.

Board AB2/2, AB3/2, AB4/2, AB5/2 and AB6/1

These are mounted in the cardframe. This is protected by a cover which is retained by two captive studs. To remove the cover, turn the studs approximately a quarter turn anticlockwise until the slots in the stud heads are aligned with the bars which are marked on the cover.

To remove a board, pull up the levers which are fitted to the top of each board. This disengages it from its socket. It can then be lifted out.

When replacing a board, ensure that it is fitted with the component side facing the centre of the instrument and that the slot in the board engages with the peg in the motherboard socket.

To obtain access to components and test points, these boards can be removed and reconnected to the instrument by means of the Extender Card which is available as an optional accessory. See under 'Accessories' in the Operating Manual.

Board AC1

This board is mounted on the left-hand side of the instrument. A clear plastic safety cover is fitted over it to prevent accidental contact with its components. To remove the cover, remove the retaining nut and lift off the cover.

To remove the board, undo the three nuts on the side frame and lever the board inwards and upwards. Separate the heat sink plate from the board by removing the screws from one side and the nut from the other.

When replacing the board, ensure that it fits in its guide.

Board AT2

This is the CRT base board. A clear plastic safety cover is fitted over it to prevent accidental contact with the board which carries high voltages. To remove the board, first remove the cover over AC1 as above. Then, pull off the AT2 with its cover. Slide the cover off the board. Unsolder the leads.

Boards AF1/2 and AF2/2

These are contained in the front panel asembly. For access to these and other components, partially remove the front panel as follows:-

(1) On the right-hand side frame, remove the upper and lower M3 screws which are immediately behind the front panel casting.

(2) On the left-hand side frame, loosen the upper and lower M3 nuts which are immediately behind the front panel casting.

(3) Loosen the retaining screw on the bracket which is below the BNC sockets.

(4) With the front panel casting remaining in place, push out the front panel assembly.

(5) For further access, disconnect the cables between the RF IN/OUT sockets and the input switching assembly AC0/2 (which is mounted on the right-hand side frame). Turn the locking nut of the upper connector (SMA plug). Pull off the lower connector (SMB socket).

(6) When replacing the assembly, ensure that no cable is trapped. Also, ensure that the screen bezel is located properly.

AF1/2 is held by the VARIABLE control and six nuts. Pull off the VARIABLE control knob, loosen the grub screw, pull off the bush and unscrew the control retaining nut. Unscrew the nuts.

AF2/2 is held by two of the VOLUME, INTENSITY and POSITION controls. Loosen the four grub screws, pull off the knobs and unscrew the two control retaining nuts.

Board AR1/1

The rear cover can be removed after removing two screws from each side above and below the side frame. This exposes AR1/1 with its screen and also the cooling fan.

To remove AR1/1, pull off connectors PLA and PLB. Unscrew the six hexagonal pillars and the central nut on the heatsink. AR1/1 can then be removed.

To remove the RF screen, first remove the rear cover and then remove the six screws which hold the screen. Ease off the grommet which protects the leads and then remove the screen.

Board AR4

This is attached to the rear panel. To remove the board, unscrew the two attachment screws and then unsolder the leads.

Input switching assembly AC0/2

To remove this unit, proceed as follows:-

(1) Remove the four screws which hold the assembly to the right-hand chassis.

(2) Unscrew the SMA connector and remove the rigid pipe which connects to the attenuator assembly AD0 (without Option 1) or RX2 (with Option 1).

(3) Remove the SMC connector which is below the SMA connector.

(4) Ease off the ribbon cable which connects to the connector PLM on the mother-board AB1/1.

(5) Remove the SMA and SMB connectors which connect to the N and BNC RF IN/OUT connector.

This assembly should not be dismantled. If a fault is found, the complete assembly should be replaced.

When reassembling, follow the above procedure in the reverse order. When replacing the rigid pipe, take particular care not to overtighten the connector.

Attenuator assembly AD0 (Except Option 1)

Remove attenuator assembly AD0 from the instrument to gain access to part of AB1/1. Proceed as follows:-

(1) Unscrew and remove the pipe connecting to switching assembly AC0/2. Unscrew the connector to the RF tray lead.

(2) Support the assembly while removing the two screws from the side frame. The assembly may now be removed, still connected by its ribbon cable.

(3) When reassembling, take particular care not to overtighten the pipe connectors.

Receiver tray assembly RX1 (Option 1 only)

When looking from the front of the instrument with the top outer cover removed, the receiver tray assembly RX1 is located to the right of the plug-in board compartment. Access for fault-finding and adjustments is obtained as follows:-

(1) Remove the three screws (one at the top front and two at the top rear) which secure RX1 to the plug-in board compartment.

(2) On the bypass switch assembly RX3, disconnect the pipe from SKB (the second connector from the front). At the RX1 end, this is to the front lower connector SKA (RF in).

(3) On RX1, disconnect the cable from connector PLC (IF out). At the RX3 end, this is to SKC (the third connector from the front).

(4) On RX1, there are two pegs which locate into retaining holes in the mother-board. Gently lift RX1 upwards by about 2 cm to release it.

(5) With care, lift the front end of RX1 just far enough to perform operations (6) and (7).

(6) On RX1, disconnect the upper pipe from connector PLB (LO in) but leave it connected at the attenuator and switch assembly RX2.

(7) On RX1, disconnect and remove the lower pipe from connector SKA (RF in).

(8) Place some protection on top of the plug-in board compartment and then gently manipulate RX1 upwards and lay it flat on the plug-in board compartment. Take care not to damage the feed-throughs.

(9) Lift RX1, twist it clockwise and upside down and again lay it flat on the plug-in board compartment but now with the lid on top. To make this easier, you may prefer to remove temporarily the ribbon cable to PL2.

(10) Remove the lid of RX1 for access to the boards RX11 and RX12.

(11) When replacing the lid and the connector pipes, secure them tightly as RF leakage could affect the sensitivity.

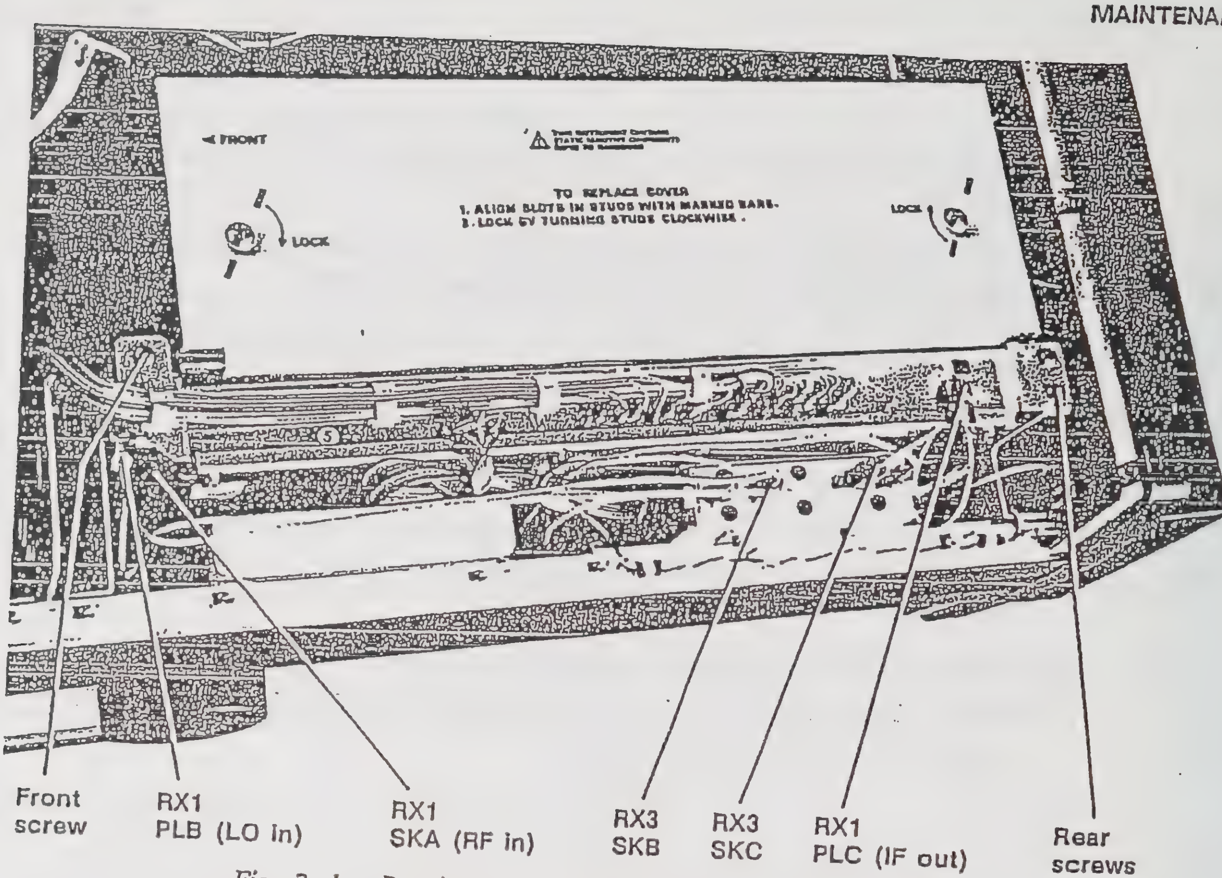


Fig. 2–1 Receiver tray assembly RX1 in normal position

Fig. 2–2 Receiver tray assembly RX1 with lid removed

Attenuator and switch assemblies RX2 and RX3 (Option 1 only)

These are attached by means of screws to a side mounting plate which is attached by means of screws to the side of the instrument. Proceed as follows:-

(1) Unscrew the SMA connectors and remove the pipes.

(2) Remove the screws on RX2 and lift it out.

(3) Remove the screws on the side mounting plate and lift it (with RX3) out.

(4) Remove the screws on RX3.

(5) To detach the ribbon cables, remove the lids.

(6) When reassembling, take particular care not to overtighten the pipe connectors.

CRT

There is an earthed metal screen surrounding the CRT. This can be removed after first removing the cover over the CRT drive board AC1 and the CRT base board AT2 as above. This gives access to two screws which secure the screen to the floor of the instrument. Loosen these screws and then slide the screen backwards until the screws enter the apertures. On AC1, withdraw connector PLA and then lift off the screen.

When replacing the screen, ensure that the washers are immediately under the screwheads.

To remove the CRT, place the instrument on its face. Withdraw the yoke assembly. Then, using the pulls, unhook the triangular bandage. The CRT can then be pulled away complete with its rubber housing. Finally, remove the red EHT lead by gently levering off the grey anode cap.

PERFORMANCE TESTS

To verify the performance as given under 'Performance Data' in the Operating Manual, utilize the tests given under 'Acceptance tests' in the Operating Manual.

ENTERING CALIBRATION DATA

Note...

This facility should not be used except as described in Chap. 5–2 or under the supervision of a Marconi Instruments representative. The effect of changing data is not immediate and is only seen after returning to one of the normal operating modes.

Transmitter and receiver testing modes

To enter data, proceed as follows:–

(1) Press the TX TEST or RX TEST key and check that the TRANSMITTER TEST or RECEIVER TEST display appears.

(2) Unlock the facility by pressing in turn the HELP key, the CHANGE PARAMETERS soft key, the AC DC key, the VERT $\updownarrow$ key, the FREQ ↓ key and the REP SWEEP key. The CALIBRATION DATA display appears.

(3) Ensure that the PAGE selection is 0.

(4) Press the SET ADDRESS soft key. ADDRESS appears in reverse video until an address is entered.

(5) Enter the address using the DATA keypad or increase or decrease the existing address by using the Δ INCREMENT FREQ (tens digit) and LEVEL (units digit) keys. The existing data at the selected address appears under READ.

(6) Enter new data using the DATA keypad. It appears under WRITE. To enter this data, press the ENTER DATA soft key. It then appears under READ.

Transmitter monitor mode (Option 1 only)

See in Chap. 5–3 for the use of the TEMPERATURE ADC, SIGNAL STRENGTH ADC and RANGE readings. Proceed as follows:–

(1) Press the TX MON ON–OFF key and check that the TRANSMITTER MONITOR display appears.

(2) Unlock the facility by pressing in turn the HELP key, the TX MON ON–OFF key, AC DC key, the VERT $\updownarrow$ key, the FREQ ↓ key and the REP SWEEP key. The CALIBRATION MODE display appears.

(3) To disable the automatic ranging for the RF input level, press the HOLD RANGE soft key.

(4) To enter the calibration procedure STAGE 1, press the CALIBRATE soft key.

Chapter 3

ADJUSTMENT AND CALIBRATION

INTRODUCTION

This chapter describes adjustments which will restore the Test Set to its peak operating condition. Test equipment recommended for this purpose is listed in Chap. 2 and summarized for each test board procedure. Before carrying out any adjustment procedures refer to Chap. 2 for safety considerations and access instructions. Refer to relevant procedures which are detailed under board headings before attempting any adjustment.

Procedures are described for each board and are listed in board alphanumeric order. When it is known that re-adjustment is needed on just one or two boards, it is normally sufficient to confine activities to those boards alone.

Adjustment and factory selected components are indicated on the circuit diagrams and their location is shown on the layout diagrams opposite the circuit diagrams.

TABLE 3-1 ADJUSTMENT GUIDE - PLUG-IN BOARDS

Adjustment	Board	Component
A-D converter calibration FM and ΦM monitor	AB2/2	R14
RF power meter calibration	AB5/2	R106
FM and ΦM monitor	AB5/2	R129
AM monitor	AB5/2	R138
AM monitor	AB5/2	R168
AM monitor	AB5/2	R172
Scope path gain	AB5/2	R209
Voltmeter and scope ranging	AB5/2	R213
Voltmeter and scope ranging	AB5/2	R230
Voltmeter and scope ranging	AB5/2	R339
Voltmeter gain	AB5/2	R231
Voltmeter and scope ranging	AB5/2	R243
Voltmeter and scope ranging	AB5/2	R244
Band-pass filter	AB5/2	R305
Notch width	AB5/2	R314
AF generator output level	AB6/1	R1
RF output level calibration	AB6/1	R20

TABLE 3-2 ADJUSTMENT GUIDE - NON-PLUG-IN BOARDS

Adjustment	Board	Component
Mixer 10 MHz rejection	AA1	R11
Phase detector balance	AA1	R27
Low frequency external FM	AA3	R138
200 MHz oscillator	AA4/1	C79
Linearity and width	AC1	L1
Frame height	AC1	R3
Frame linearity	AC1	R6
Vertical shift	AC1	R21
Focus	AC1	R26
10 MHz standard	AC1	R39
Low level volts	AR1/1	R46
+5 V supply line	AR1/1	R47

The board tests always assume that all other sections of the instrument are working correctly. Also, for each test of a component or group of components, it is assumed that all other components on the board are working correctly. This approach enables a fault finding procedure to be continued down to component level and also enables a quick functional check to be made following the replacement of a component or board. For these tests, the only equipment normally required is an oscilloscope.

Tables 3-1 and 3-2, which are intended for use with Fig. 3-1, summarize the various instrument adjustment points. Table 3-5 shows those for the plug-in boards held in the card-frame while Table 3-6 shows the remaining, generally less accessible, ones. Fig. 3-1 is a simplified plan view of the instrument and shows the adjustment points that are accessible from above the instrument while also showing the locations of all boards except those in the RF tray. In the majority of cases, adjustment should only be necessary following component replacement. Adjustments can be made in accordance with the details given under the appropriate board headings, using the equipment specified in Chap. 2.

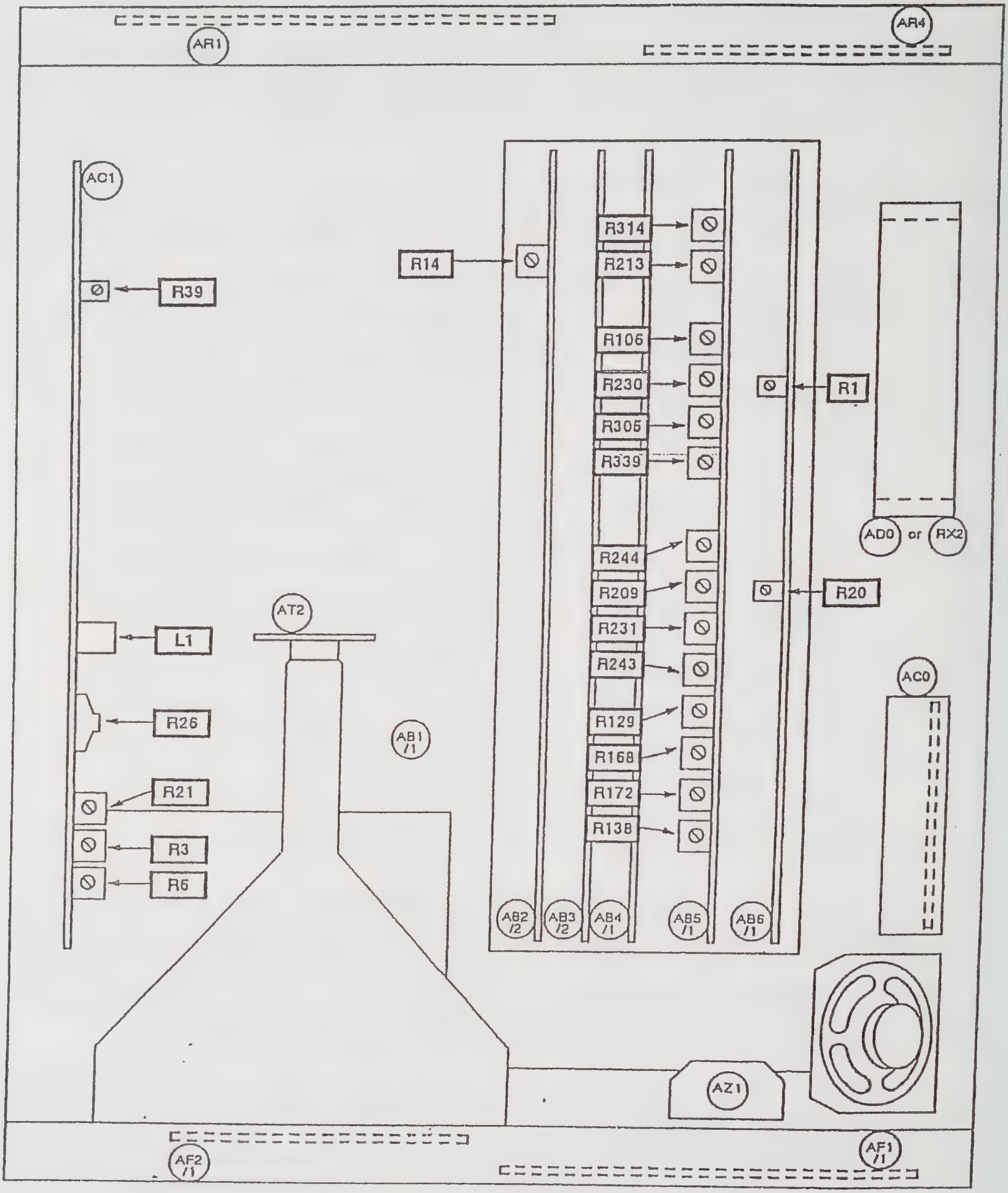


Fig. 3–1 Adjustment points accessible from above the instrument

RF MODULATION METER BOARD AA1

Test equipment : Signal generator, oscilloscope.

Mixer 10 MHz rejection

This adjustment sets up maximum rejection of the 10 MHz fundamental at the output of mixer IC2. It provides a clean IF output when the low frequency oscillator is being used. Proceed as follows:-

(1) Connect the equipment as shown in Fig. 3-2.

(2) Set the UUT to TRANSMITTER TEST, BNC input socket.

(3) Set the signal generator to a carrier frequency of 55.6 MHz, RF level 0 dBm, modulation off.

(4) Connect the oscilloscope probe to the IF OUTPUT at PLC. Adjust R11 for minimum distortion (i.e. cleanest sinewave).

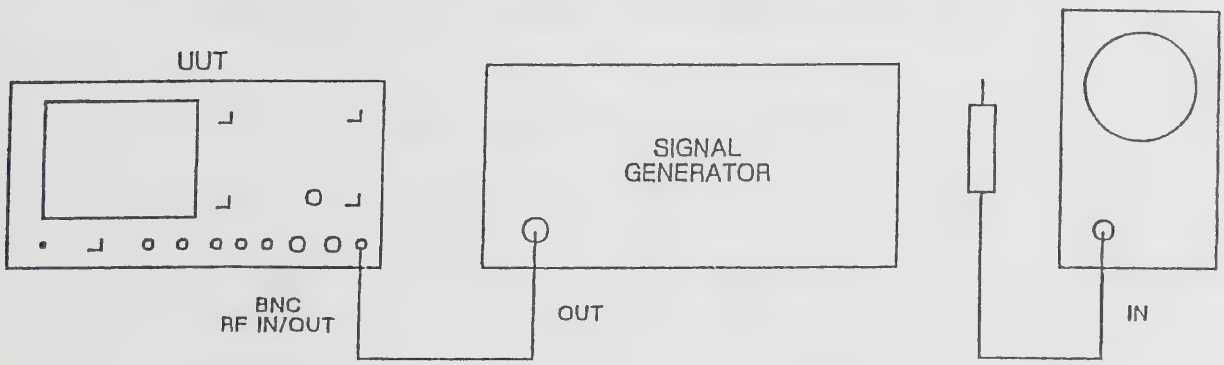


Fig. 3-2 Test equipment connections for adjusting R11 and R27 on AA1

Phase detector balance

This adjustment removes the 265 Hz spikes produced by synthesizer chip IC3. Proceed as follows:-

(1) Connect the equipment as shown in Fig. 3-2.

(2) Set the UUT to TRANSMITTER TEST, BNC input socket.

(3) Set the signal generator to a carrier frequency of 300 MHz, RF level 13 dBm, modulation off.

(4) Monitor TP1 on the oscilloscope and adjust R27 to reduce the height of the pulse spikes to a minimum. The spikes should be less than 150 mV in either the positive or negative direction.

RF SYNTHESIZER AND OSCILLATOR BOARD AA3

Test equipment : Modulation meter, synthesized LF generator, oscilloscope.

Low frequency external FM

This adjustment sets up the modulation input to synthesizer chip IC106 to prevent the PLL from restricting any low frequency FM from being applied. Proceed as follows:–

(1) Connect the equipment as shown in Fig. 3–3.

(2) Set the UUT to RECEIVER TEST, BNC output socket. Set the signal generator to 300 MHz, level 0 dBm, 0 kHz FM.

(3) Set the synthesized LF generator to give a 10 Hz square wave of 1 V pk–pk.

(4) Set the modulation meter to monitor FM. (If the Marconi Modulation Meter 2305 is used, select the 10 Hz to 300 kHz filter and set the LF control to the white mark.)

(5) The oscilloscope should display a fuzzy 10 Hz 'square wave' which will have some sag. If there is more than 40% sag, adjust R138 until the top and bottom of the waveform are reasonably straight and smooth.

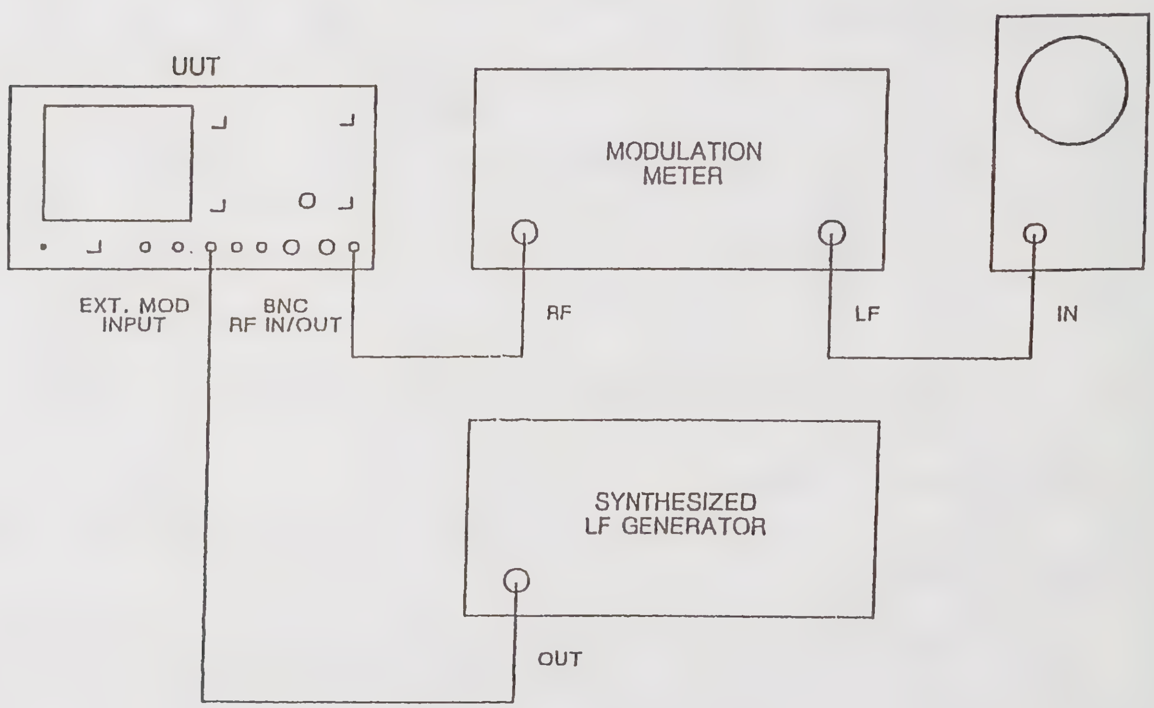


Fig. 3–3 Test equipment connections for adjusting R138 on AA3

LF SYNTHESIZER AND OUTPUT AMPLIFIER BOARD AA4/1

Test equipment : Frequency counter DVM.

200 MHz oscillator

This adjustment sets up the PLL capture range of the 200 MHz oscillator. Incorrect adjustment of C79 may result in the signal generator frequency not locking between 0.4 and 88 MHz. Proceed as follows:-

(1) Connect the equipment as shown in Fig. 3-4.

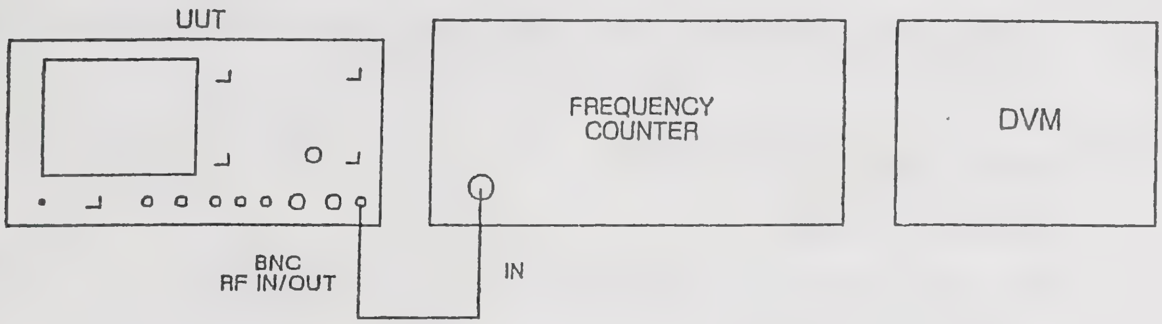


Fig. 3-4 Test equipment connections for adjusting C79 on AA4/1

(2) Turn C79 to one end (plates either fully open or fully closed).

(3) Set the UUT to RECEIVER TEST, BNC output socket. Set the UUT signal generator to 50 MHz, RF level 0 dBm, modulation off.

(4) Monitor the output with the frequency counter. If locked to 50 MHz, remove and reconnect PLA until the frequency remains unlocked with PLA connected.

(5) Using a high impedance (>1 MΩ) DVM set to DC, note the voltage at the junction of R47, R64 w.r.t. earth.

(6) Slowly adjust C79 until the counter shows that the frequency is locked to 50 MHz.

(7) Finally, adjust C79 to give a reading on the DVM of 30 mV less than the previously noted voltage.

(8) Select a UUT signal generator frequency of 100 MHz and check that the counter reads 100 MHz.

(9) Reset the UUT signal generator frequency to 50 MHz and again check on the counter that it re-locks to 50 MHz.

DIGITAL SCOPE BOARD AB2/2

For adjustment of R14, see under 'FM and ΦM monitor' (7) for board AB5/2.

DEMODULATION AND SCOPE AB5/2

Test equipment: AC/DC calibrator, synthesized LF generator, signal generator, modulation meter, oscilloscope, DVM, power source.

The following adjustments affect the calibration of the oscilloscope, voltmeter, AF generator, AM/FM/ΦM monitors, distortion/SINAD meter and filters.

Note...

Many of the adjustments interact with each other so the following adjustments should be carried out in the sequence given below.

Voltmeter and scope ranging

Proceed as follows:-

(1) To minimise noise pick-up during the adjustment of R243, earth the AF input to IC200 on pin 2 as close to the IC as is practical.

(2) Set R243, R244 and R213 to their mid-positions.

(3) Set the UUT to RECEIVER TEST, AF generator frequency 1 kHz and level 0 mV. Select distortion-SINAD-S/N off, 50 kHz low-pass filter.

(4) Monitor IC200 output on pin 6 with the DVM set to DC. Adjust R243 to give a reading on the DVM as close to 0 mV DC as possible. Remove the DVM.

(5) Select SCOPE and set the UUT oscilloscope to 20V/DIV, DC coupled. Using the oscilloscope vertical position control, set the trace to the centre graticule line.

(6) Change to 10mV/DIV and adjust R244 to bring the trace onto the centre line. Change to 100mV/DIV and adjust R213 to bring the trace once again onto the centre line.

(7) Repeat the adjustments in the preceding step until the trace remains stationary on the centre line through all the scope ranges.

(8) Set the UUT to AUDIO TEST and select the 50 kHz low-pass filter and DC coupling.

(9) Monitor AB5/1 edge connector pin 31b with the DVM. Adjust R339 for a minimum reading (±1 mV DC).

(10) Remove the earthing link.

Voltmeter gain

Proceed as follows:–

(1) Connect the equipment as shown in Fig. 3–5.

(2) Set the calibrator to give 5.000 V DC.

(3) Set the UUT to RECEIVER TEST, distortion–SINAD–S/N off, DC coupled, 50 kHz low–pass filter.

(4) Adjust R231 until an AF level of 5.00 V DC is displayed.

Fig. 3–5 Test equipment connections for adjusting R231 on AB5/1

Band–pass filter

Proceed as follows:–

(1) Connect the equipment as shown in Fig. 3–6.

(2) Set the synthesized LF generator to give a 1 kHz sinewave at a level of 1 V RMS.

(3) Set the UUT to RECEIVER TEST, distortion–SINAD--S/N off, AC coupled, 50 kHz low–pass filter.

(4) Note the reading on the UUT AF voltmeter.

(5) Select the band–pass filter on the UUT Now adjust R305 to obtain the same AF voltmeter reading on the UUT display as was indicated with the 50 kHz low–pass filter selected.

Fig. 3–6 Test equipment connections for adjusting R305 and R314 on AB5/1

Notch width

Proceed as follows:-

(1) Connect the equipment as shown in Fig. 3-6.

(2) Set the synthesized LF generator to give a 1.007 kHz sinewave at a level of 1 V RMS.

(3) Set the UUT to RECEIVER TEST, AF generator, 0.3 to 3.4 kHz band-pass filter, AC coupled, distortion on.

(4) Adjust R314 for the minimum possible distortion reading on the UUT display.

AM monitor

Proceed as follows:-

(1) Connect the signal generator to the UUT as shown in Fig. 3-7.

(2) Set the signal generator to carrier frequency 100 MHz, modulation off, RF level 0 dBm.

(3) Set the UUT to TRANSMITTER TEST, monitoring AM, 0.3 to 3.4 kHz band-pass filter, BNC input.

(4) Set R172 to mid-position. Monitor TP1 via the probe on the oscilloscope.

(5) Reduce the signal generator output slowly until the trace on the oscilloscope starts to reduce. Now adjust R138 to peak the trace, i.e. maximum amplitude on TP1.

(6) Increase the signal generator RF level to 0 dBm and adjust R172 for 1 V pk-pk on the oscilloscope. Remove the oscilloscope probe from TP1.

(7) Set the signal generator to carrier 100 MHz, AM 50%, modulation 1 kHz, RF level 0 dBm.

(8) Set the modulation meter to measure AM, (pk-pk)/2 with the 0.3 to 3.4 kHz band-pass filter selected.

(9) Connect the signal generator output to the modulation meter input and note the AM depth reading.

(10) Connect the signal generator output to the UUT BNC input socket and adjust R168 to give the same AM reading on the UUT as was displayed on the modulation meter.

FM and ΦM monitor

Proceed as follows:-

(1) Connect the signal generator to the modulation meter as shown in Fig. 3-7.

(2) Set the signal generator to carrier frequency 100 MHz, FM deviation 5 kHz, modulation rate 1 kHz, RF level 0 dBm.

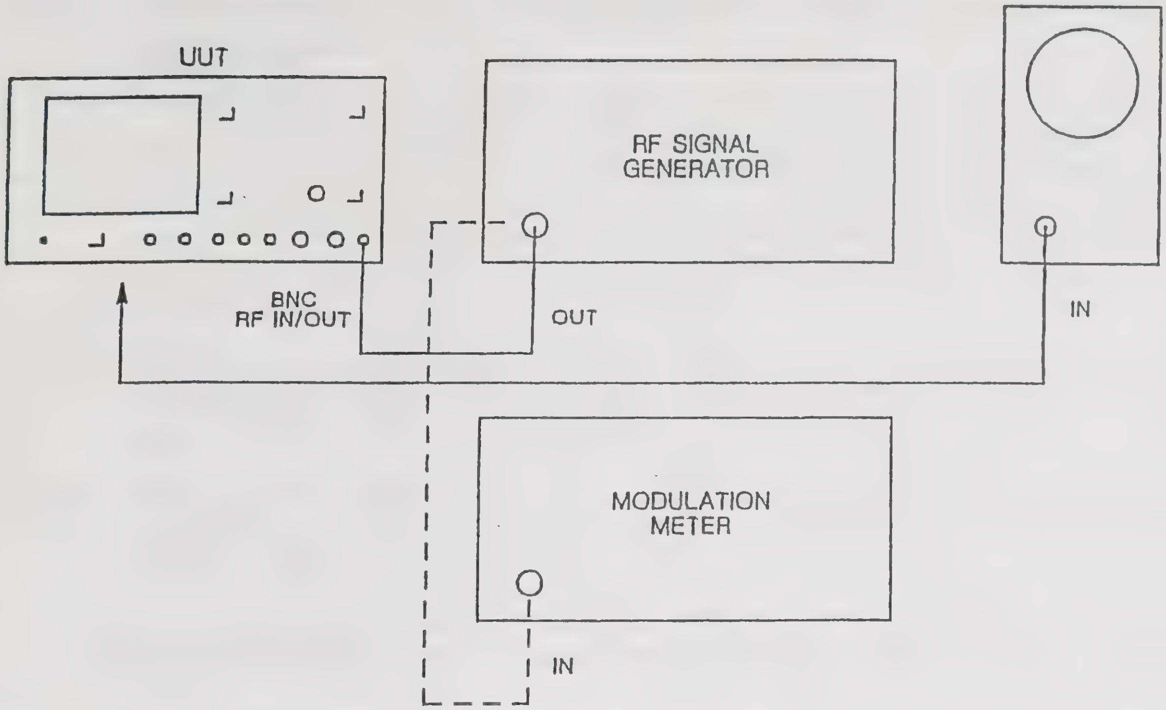


Fig. 3–7 Test equipment connections for adjusting R138,R172,R168,R129 on AB5/1

(3) Set the modulation meter to measure FM with the 0.3 to 3.4 kHz band–pass filter selected.

(4) Adjust the signal generator FM deviation level to give a reading of 5.00 kHz deviation on the modulation meter.

(5) Set the UUT to TRANSMITTER TEST, monitoring FM, 0.3 to 3.4 kHz band–pass filter, BNC input.

(6) Connect the signal generator to the UUT BNC input and adjust R129 for a 5.00 kHz indication on the 2955B display.

(7) Select SCOPE on the UUT and +6/–6 FM oscilloscope range. Adjust R14 on board AB2/2 to indicate ±5 kHz FM on the UUT oscilloscope.

Scope path gain

Proceed as follows:–

(1) Connect the equipment as shown in Fig. 3–8.

(2) Set the synthesized LF generator to give a 1 kHz sinewave and adjust the level for an indication of 0.707 V RMS on the DVM.

(3) Adjust R209 for a 2 V pk–pk (4 divisions) indication on the UUT oscilloscope.

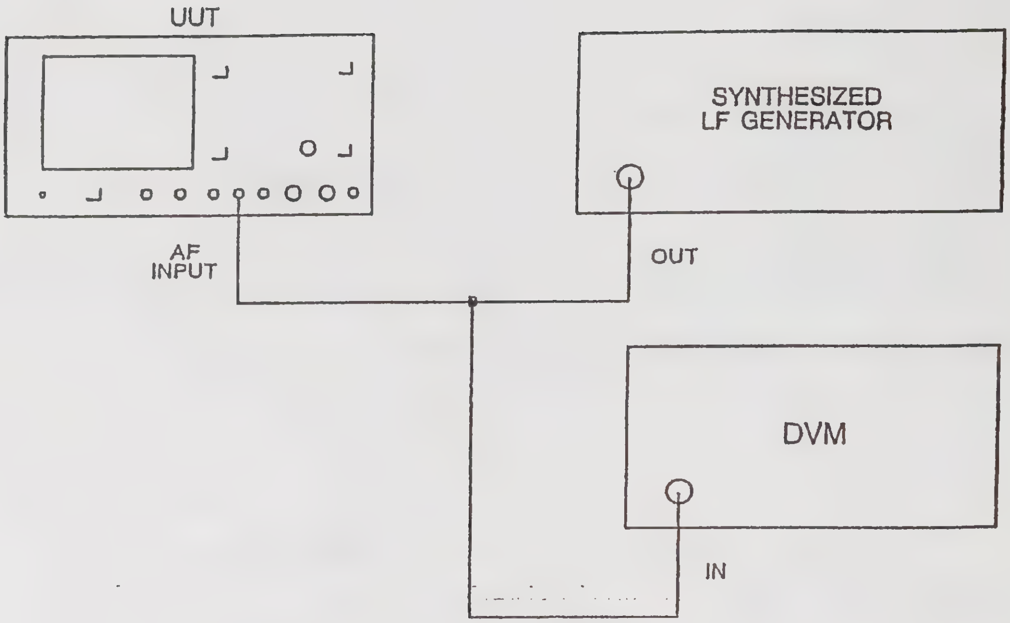


Fig. 3–8 Test equipment connections for adjusting R209 on AB5/1

RF power meter calibration and software correction

Calibration of the RF power meter requires the use of an accurate power source capable of supplying at least 2 W from 1 MHz to 1.1 GHz with an accuracy of ±2% up to 500 MHz and ±3% up to 1.1 GHz. Proceed as follows:–

(1) Connect the equipment as shown in Fig. 3–9, where the power source is a calibrated one formed from the equipment shown in as described under 'RF power meter' in Chap. 6 of the Operating Manual.

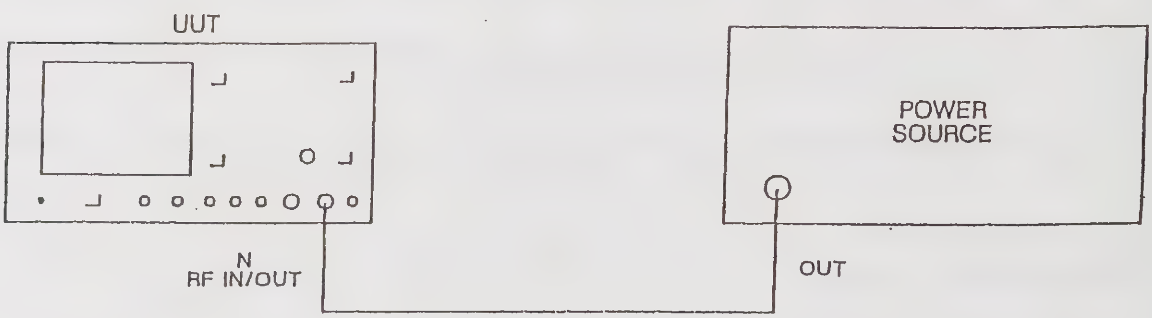


Fig. 3–9 Test equipment connections for adjusting R106 on AB5/1

(2) Set the UUT to TRANSMITTER TEST, N input socket.

(3) Set the power source to give 220 mW at 100 MHz.

(4) Note the power reading on the UUT display. Repeat for the frequencies shown in Table 3–3a noting the power reading on the UUT for each frequency.

(5) If the power readings are all low or all high, it will only be necessary to adjust R106 to optimize.

(6) If the readings are randomly high and low, the software corrections will require altering. To do this, enter the new data using the 2955B unlocking and data insertion procedure. Since different circuits are switched in internally for different levels and frequencies there are several sets of corresponding correction points. These corrections should be carried out at the frequencies and levels given in Tables 3-3a to 3-3e. This will ensure that the correct circuits are switched in.

(7) Set the power source to give 220 mW. Carry out the software correction for the frequencies and addresses given in Table 3-3a (20 dB pad on AA2 out, high oscillator band on AA1 selected).

(8) Set the power source to give 2 W. Carry out the software correction for the frequencies and addresses given in Table 3-3b (20 dB pad on AA2 in, high oscillator band on AA1 selected).

(9) Set the UUT to one port DUPLEX test, with the power source at 2 W. Carry out the software correction for the frequencies and addresses given in Table 3-3c.

(10) Set the UUT to TRANSMITTER TEST, with the power source at 2 W. Carry out the software correction for the frequencies and addresses given in Table 3-3d (20 dB pad on AA2 in, low oscillator band on AA1 selected).

(11) Set the power source to give 220 mW, then carry out the software correction for the frequencies and addresses given in Table 3-3e (20 dB pad on AA2 out, low oscillator band on AA1 selected).

TABLE 3-3a RF POWER METER SOFTWARE CORRECTION
(20 dB OUT, HIGH OSCILLATOR BAND)

Address of correction figure	Frequency	Address of correction figure	Frequency
63445	11.5 MHz	63468	830 MHz
63446	50 MHz	63469	840 MHz
63447	100 MHz	63470	850 MHz
63448	150 MHz	63471	860 MHz
63449	200 MHz	63472	870 MHz
63450	250 MHz	63473	880 MHz
63451	300 MHz	63474	890 MHz
63452	350 MHz	63475	900 MHz
63453	400 MHz	63476	910 MHz
63454	450 MHz	63477	920 MHz
63455	500 MHz	63478	930 MHz
63456	550 MHz	63479	940 MHz
63457	600 MHz	63480	950 MHz
63458	650 MHz	63481	960 MHz
63459	670 MHz	63482	970 MHz
63460	690 MHz	63483	980 MHz
63461	710 MHz	63484	990 MHz
63462	730 MHz	63485	1000 MHz
63463	750 MHz	63486	1010 MHz
63464	770 MHz	63487	1020 MHz
63465	790 MHz		
63466	810 MHz		
63467	820 MHz		

TABLE 3-3b RF POWER METER SOFTWARE CORRECTION
(20 dB IN, HIGH OSCILLATOR BAND)

Address of correction figure	Frequency	Address of correction figure	Frequency
63402	11.5 MHz	63424	820 MHz
63403	50 MHz	63425	830 MHz
63404	100 MHz	63426	840 MHz
63405	150 MHz	63427	850 MHz
63406	200 MHz	63428	860 MHz
63407	250 MHz	63429	870 MHz
63408	300 MHz	63430	880 MHz
63409	350 MHz	63431	890 MHz
63410	400 MHz	63432	900 MHz
63411	450 MHz	63433	910 MHz
63412	500 MHz	63434	920 MHz
63413	550 MHz	63435	930 MHz
63414	600 MHz	63436	940 MHz
63415	650 MHz	63437	950 MHz
63416	670 MHz	63438	960 MHz
63417	690 MHz	63439	970 MHz
63418	710 MHz	63440	980 MHz
63419	730 MHz	63441	990 MHz
63420	750 MHz	63442	1000 MHz
63421	770 MHz	63443	1010 MHz
63422	790 MHz	63444	1020 MHz
63423	810 MHz		

TABLE 3-3c RF POWER METER SOFTWARE CORRECTION
(ONE-PORT DUPLEX)

Address of correction figure	Frequency	Address of correction figure	Frequency
63167	11.5 MHz	63178	550 MHz
63168	50 MHz	63179	600 MHz
63169	100 MHz	63180	650 MHz
63170	150 MHz	63181	700 MHz
63171	200 MHz	63182	750 MHz
63172	250 MHz	63183	800 MHz
63173	300 MHz	63184	850 MHz
63174	350 MHz	63185	900 MHz
63175	400 MHz	63186	950 MHz
63176	450 MHz	63187	1000 MHz
63177	500 MHz	63188	1020 MHz

TABLE 3-3d RF POWER METER SOFTWARE CORRECTION (20 dB IN, LOW OSCILLATOR BAND)

Address of correction figure	Frequency	
63132	1.5 MHz	These corrections interpolate as grouped, e.g. the corrections for 1.5, 2.15 and 2.98 MHz all affect each other and should be adjusted until the power reading is correct at all 3 frequencies.
63133	2.15 MHz	
63134	2.98 MHz	
63135	3.01 MHz	
63136	4.5 MHz	
63137	6.08 MHz	
63138	6.12 MHz	
63139	9.18 MHz	
63140	9.22 MHz	
63141	13.8 MHz	
63142	56.9 MHz	

TABLE 3-3e RF POWER METER SOFTWARE CORRECTION (20 dB OUT, LOW OSCILLATOR BAND)

Address of correction figure	Frequency	
63146	1.5 MHz	These corrections interpolate as grouped, e.g. the corrections for 1.5, 2.15 and 2.98 MHz all affect each other and should be adjusted until the power reading is correct at all 3 frequencies.
63147	2.15 MHz	
63148	2.98 MHz	
63149	3.01 MHz	
63150	4.5 MHz	
63151	6.08 MHz	
63152	6.12 MHz	
63153	9.18 MHz	
63154	9.22 MHz	
63155	13.8 MHz	
63156	56.9 MHz	

AF SYNTHESIZER BOARD AB6/1

Test equipment: DVM, power meter, modulation meter.

AF generator output level

To adjust the AF generator output level proceed as follows:–

(1) Connect the equipment as shown in Fig. 3–10.

(2) Set the UUT to AUDIO TEST.

(3) Set the UUT AF GEN 1 frequency to 1 kHz sine wave, level 1 V. Ensure that AF GEN 2 is switched off.

(4) Set the DVM to measure AC.

(5) Adjust R1 (for adjustment locations see Fig. 3–1) for a DVM reading of 1 V ±0.005 V.

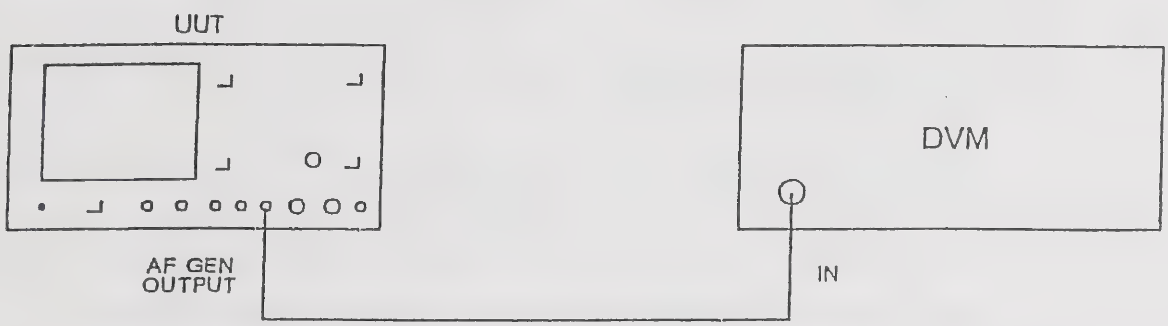


Fig. 3–10 Test equipment connections for adjusting R1 on AB6/1

RF output level calibration

Calibration of the RF generator signal levels is carried out using R20 and software correction for the electronic fine attenuator.

Note...

If the RF output level is adjusted, the RF generator AM and FM has to be recalibrated.

In most instances of recalibration, it is likely that the RF level will only require optimising using R20, i.e. the entire range of the electronic attenuator is slightly high or slightly low. This is determined by proceeding as follows:–

(1) Connect the equipment shown in Fig. 3–11 via the 6912 sensor.

(2) Set the UUT to RECEIVER TEST, RF generator frequency 300 MHz, level –15.5 dBm, increment 1 dB, modulation off, N socket.

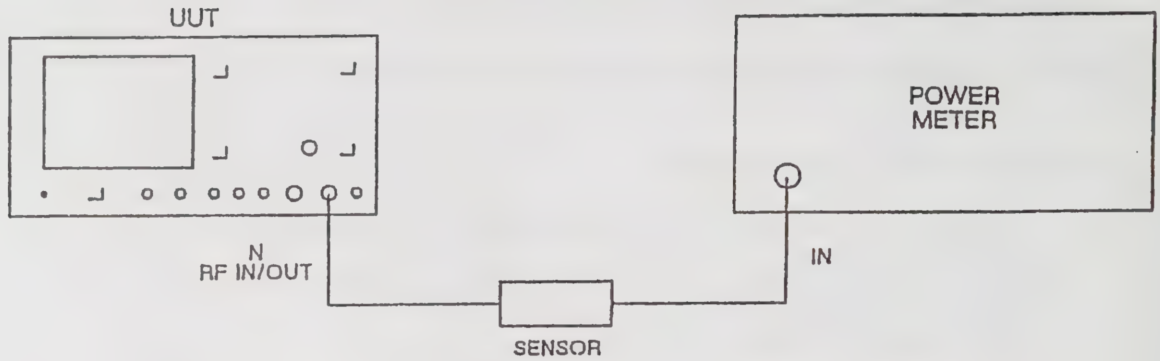


Fig. 3-11 Test equipment connections for adjusting R20 on AB6/1

(3) Adjust R20 for an indication on the power meter of -15.5 dBm.

(4) Using the decrement key, decrement in 1 dB steps to -25.5 dBm while checking each step level on the power meter.

(5) If these levels are correct, the software correction for the fine attenuator need not be carried out.

(6) If these levels are incorrect, the electronic fine attenuator will have to be recalibrated as given below.

Recalibration of electronic fine attenuator

Proceed as follows:-

(1) Enter the CALIBRATION DATA facility as described in Chap. 2.

(2) Enter address 63232, then enter a data correction figure of 005 into this address.

(3) Next enter address 63244 and enter a nominal correction figure of 000. Press the increment level key once to obtain the next memory address (63245) and again enter a nominal figure of 000. Continue this process entering a nominal figure of 000 up to and including address 63254.

(4) Re-enter receiver test and adjust R20 for an indication on the power meter of -15.5 dBm.

(5) Decrement the RF output by 1 dB, using the decrement level key, to -21.5 dBm and note the reading on the power meter.

(6) If the output level is incorrect, enter the data menu and correct the data. Data corrections may be made in the range 000 to 254, and a data correction of 1 gives an approximate change in level of 0.01 dB. Note that after altering any correction data figures, the RF level does not change until after returning to the receiver test mode.

(7) Repeat step (6) above for the levels and addresses shown in Table 5-12.

Note...

It is vital to step down in 1 dB steps using the decrement level key and not by selecting the level desired using the white data entry keys. This is to ensure that none of the bulk attenuator pads are switched in and that the fine attenuator is calibrated over its entire range.

TABLE 3-4 RF OUTPUT LEVEL SOFTWARE CORRECTION

Address of correction figure	RF level	Address of correction figure	RF level
63244	-15.5 dBm	63250	-21.5 dBm
63245	-16.5 dBm	63251	-22.5 dBm
63246	-17.5 dBm	63252	-23.5 dBm
63247	-18.5 dBm	63253	-24.5 dBm
63248	-19.5 dBm	63254	-25.5 dBm
63249	-20.5 dBm		

Signal generator AM calibration and software correction

Proceed as follows but note that AM calibration should not be carried out until after the RF level calibration has been set up as this affects the AM :-

(1) Connect the equipment as shown in Fig. 3-12.

(2) Set the UUT to RECEIVER TEST, RF generator frequency 125 MHz, RF level 5 dBm, modulation frequency 1 kHz, modulation level depth 70%, BNC socket, distortion-SINAD-S/N off.

(3) Set the modulation meter to AM, (pk-pk)/2, 0.3 to 3.4 kHz band-pass filter selected.

(4) Note the modulation depth indicated on the modulation meter.

(5) Enter the CALIBRATION DATA facility as described in Chap. 2.

Fig. 3-12 Test equipment connections for AM and FM calibration

(6) Enter address 63255 and then increase the displayed 'read' figure by 1. Ensure that the new figure has been transferred to the 'read' display.

(7) Note the data correction figure entered, then return to RECEIVER TEST mode and note the new modulation depth displayed on the modulation meter.

(8) Now calculate the AM slope by subtracting the initial measured depth from the depth now displayed. Using this AM slope figure, calculate the correction figure required to give 70% depth by the following formula :-

$$\frac{(70 - \text{Mod depth now displayed}}{(\text{AM slope fig.})} + \text{current correction data fig.}$$

(9) Enter address 63255 and enter the new calculated data correction figure. Return to RECEIVER TEST mode. Modulation depth now displayed should be within 70% ±5.9% AM. To optimise accuracy, repeat this step using the formula above.

(10) AM accuracy at level 5 dBm should now be correct. Repeat the above procedure for addresses and corresponding levels as shown in Table 3–5 up to address 63264, level -4 dBm.

(11) The AM correction figures for –5 dBm and –5.9 dBm are entered in the same way as above except care must be taken to prevent the internal 10 dB pad of the attenuator from being automatically switched in.

(12) To prevent automatic attenuator selection, set the UUT RF level to –4 dBm and set an increment level of 0.1 dB. Using the level increment down key, step down in 0.1 dB steps until –5 dBm is reached.

TABLE 3–5 SIGNAL GENERATOR AM SOFTWARE CORRECTION

Address of correction figure	RF level	Address of correction figure	RF level
63255	5 dBm	63261	-1 dBm
63256'	4 dBm	63262	-2 dBm
63257	3 dBm	63263	-3 dBm
63258	2 dBm	63264	-4 dBm
63259	1 dBm	63265	-5 dBm
63260	0 dBm	63266	-5.9 dBm

(13) The AM correction for –5 dBm can now be carried out as normal. When this is complete, decrement in 0.1 dB steps until –5.9 dBm is reached and carry out the AM correction procedure for this level.

Note...

If by accident the level is stepped past –5.9 dBm, for instance -6 dBm, the 10 dB pad is switched in and cannot be switched out by simply incrementing one step to –5.9 dBm. If this happens, return the RF level to –4 dBm and decrement –5.9 in 0.1 dB steps back to –5.9 dBm.

Signal generator FM calibration and software correction

Proceed as follows:-

(1) Connect the equipment as shown in Fig. 3-12.

(2) Set the UUT to RECEIVER TEST, RF generator frequency 165 MHz, RF level 0 dBm, modulation frequency 1 kHz sine wave, deviation 10 kHz, BNC output socket selected.

(3) Set the modulation meter to FM, (pk-pk)/2, 0.3 to 3.4 kHz BP filter selected.

(4) Note the deviation measured on the modulation meter.

(5) Enter the CALIBRATION DATA facility as described in Chap. 2.

(6) Enter address 63267 and then increase the displayed 'read' figure by 1. Ensure that the new figure has been transferred to the 'read' display.

(7) Note the data correction figure, then return to RECEIVER TEST mode and note the new deviation measured on the modulation meter.

(8) Now calculate the tracking slope by subtracting the initial measured deviation from the deviation now displayed. Using this tracking slope figure, calculate the correction figure required to give 10 kHz deviation by the following formula:-

$$\frac{(10 - \text{deviation now displayed})}{(\text{Tracking slope figure})} + \text{current correction data figure}$$

(9) Enter the CALIBRATION DATA facility as described in Chap. 2.

(10) Enter address 63257 and enter the new calculated data correction figure. Return to RECEIVER TEST mode. Deviation now displayed should be within 10 kHz ±7%. To optimise the accuracy, repeat this step using the formula above.

(11) FM accuracy at 165 MHz should now be correct. Repeat the above procedure for all the addresses and corresponding frequencies shown in Table 3-6. This lists the 131 software correction points covering the 3 main oscillators.

TABLE 3-6 SIGNAL GENERATOR FM SOFTWARE CORRECTION

Oscillator 1		Ocillator 2		Oscillator 3	
Address	Freq.	Address	Freq.	Address	Freq.
63267	165	63306	260	63354	400
63268	167.5	63307	263	63355	403
63269	170	63308	266	63356	406
63270	172.5	63309	269	63357	409
63271	175	63310	272	63358	412
63272	177.5	63311	275	63359	415
63273	180	63312	278	63360	418
63274	182.5	63313	281	63361	421
63275	185	63314	284	63362	424
63276	187.5	63315	287	63363	427
63277	190	63316	290	63364	430
63278	192.5	63317	293	63365	433
63279	195	63318	296	63366	436
63280	197.5	63319	299	63367	439
63281	200	63320	302	63368	442
63282	202.5	63321	305	63369	445
63383	205	63322	308	63370	448
63284	207.5	63323	311	63371	451
63285	210	63324	314	63372	454
63286	212.5	63325	317	63373	457
63287	215	63326	320	63374	460
63288	217.5	63327	323	63375	463
63289	220	63328	326	63376	466
63290	222.5	63329	329	63377	469
63291	225	63330	332	63378	472
63292	227.5	63331	335	63379	475
63293	230	63332	338	63380	478
63294	232.5	63333	341	63381	481
63295	235	63334	344	63382	484
63296	237.5	63335	347	63383	487
63297	240	63336	350	63384	490
63298	242.5	63337	353	63385	493
63299	245	63338	356	63386	496
63300	247.5	63339	359	63387	499
63301	250	63340	362	63388	502
63302	252.5	63341	365	63389	505
63303	255	63342	368	63390	508
63304	257.5	63343	371	63391	511
63305	259.9999	63344	374	63392	514
		63345	377	63393	517
		63346	380	63394	520
		63347	383	63395	523
		63348	386	63396	526
		63349	389	63397	529
		63350	392		
		63351	395		
		63352	398		
		63353	399.9999		

CRT DRIVE BOARD AC1

Test equipment: Synthesized signal generator, reference standard.

10 MHz standard

This adjustment governs the frequency accuracy of the RF generator, two AF generators and the AF and RF frequency counters. Note that the adjustment should not be carried out until the instrument has been switched on for at least 20 minutes. Then proceed as follows:–

(1) Connect the equipment as shown in Fig. 3–13, but ensure that the external reference standard has an accuracy better than ±5 parts in 10^{10}.

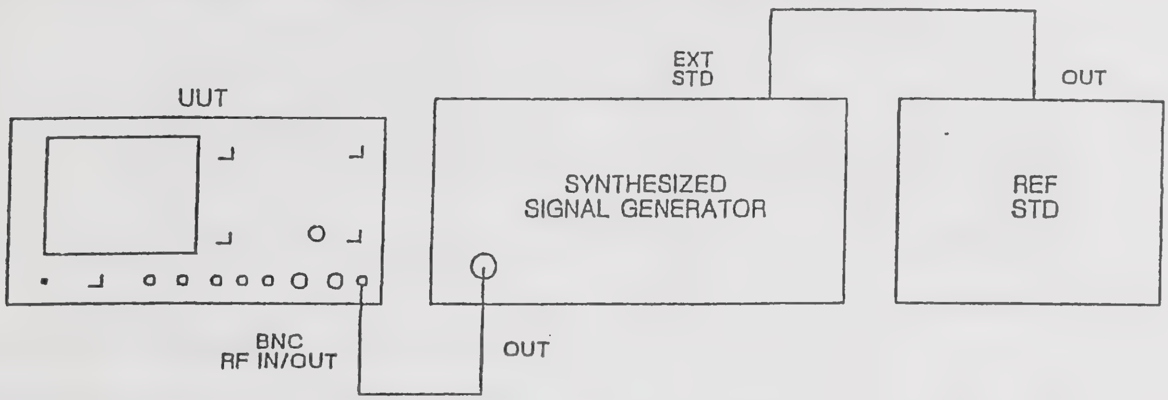


Fig. 3–13 Test equipment connections for adjusting R39 on AC1

(2) Set the synthesized signal generator to external standard, carrier frequency 1000 MHz, modulation off, RF level 0 dBm.

(3) Set the UUT to TRANSMITTER TEST, BNC input socket selected.

(4) Adjust R39 for a transmitter frequency indication on the UUT display of 1000 MHz ±1 count.

Frame height

To obtain full horizontal cover of the tube face, adjust HEIGHT preset R3.

Frame linearity

To obtain a linear display across the tube face, adjust LINEARITY preset R6.

Vertical shift

To position the display centrally on the tube face, adjust VERT SHIFT preset R21.

Linearity and width

To obtain full vertical cover of the tube face, adjust LIN AND WIDTH preset L1.

Focus

To obtain sharp focus of the display, adjust FOCUS control R26.

POWER SUPPLY BOARD AR1/1

Test equipment: DC supply, DVM.

Low level volts

Proceed as follows:–

(1) Disconnect the AC mains supply lead from the UUT AC SUPPLY socket.

(2) Connect the DVM and a DC supply capable of supplying 55 W at 16 V to the UUT rear panel DC SUPPLY socket. See Fig. 3–14. If the 2955B does not have the DC Supply Unit fitted (Option 6), connect the DC supply directly to PLB pin 4 (positive) and pin 2 (negative).

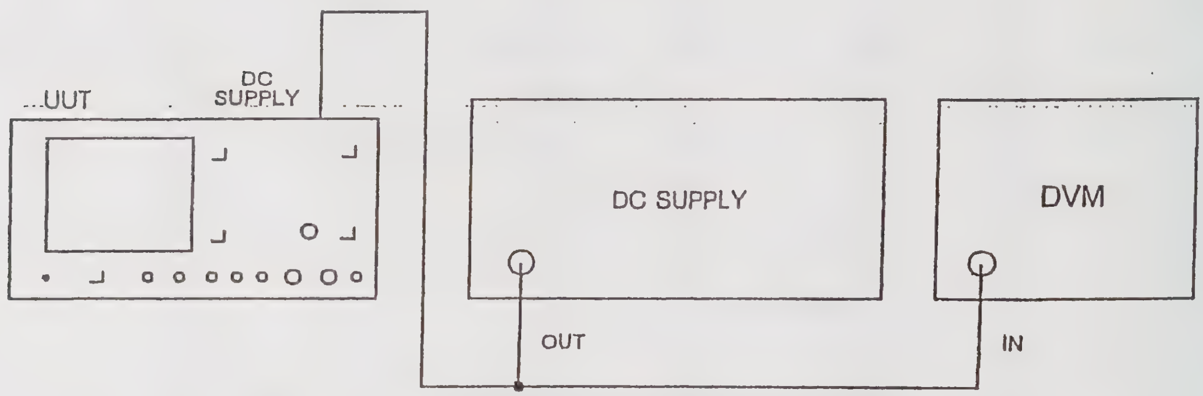


Fig. 3–14 Test equipment connections for adjusting R46 on AR1

(3) Switch on the UUT on and adjust the DC supply until the DVM reads 10.8 V. If the DC supply has been connected directly to PLB, adjust the DC supply so that the voltage at PLB is 10.3 V.

(4) Remove the DVM and connect it between tag 8 (orange lead) and earth.

(5) Adjust R46 for a DVM reading of 1.8 V, but note that due to the nature of this adjustment the voltage will be unstable.

+5 V supply

Proceed as follows:–

(1) Connect the DVM between tag 4 and earth.

(2) Adjust R47 for 5.05 V at tag 4.

SENSITIVE OFF-AIR RECEIVER

Any problem which is experienced with the receiver performance is more likely to be due to component failure than to maladjustment of presets once these have been set at the factory. Because many of the presets are interactive, initial action should be to determine, as far as possible, that component failure is not the cause of the fault symptom before any adjustments are made.

The procedures for the receiver tray assume that all other areas of the 2955B are performing correctly. Before making any adjustments to the hardware or the software, ensure that the 2955B has been on for not less than 30 minutes.

Adjustments should be made in the following order:–

Circuit	Board	Components
LO driver notch filter	RX12	L1, L2, L3, L4
20 dB IF 180 kHz band-pass amplifier	RX11	C15, C18, C27, C31
AGC and 38 dB amplifiers	RX11	R87, L16, L19, R59

After these hardware adjustments, software calibration can be undertaken.

LO driver 21.4 MHz notch filter

Test equipment: Spectrum analyzer (with tracking generator), active probe, lead with an SMC socket (female) and with a connector to the spectrum analyzer (tracking generator output).

Proceed as follows:–

(1) Remove the interconnecting link between RX12 and RX11.

(2) Connect the tracking generator output to the LO input of RX12 at the SMC plug PLB. Using the active probe, connect the spectrum analyzer RF input to the signal output of RX12 at the interconnecting link position. See Fig. 3-15. Earth the probe on the wall of the tray or on the adjacent pad.

(3) On the 2955B, set the MODE to TRANSMITTER MONITOR. Check that the TRANSMITTER TEST FREQUENCY is 300 MHz (to ensure that the notch filter is in circuit).

(4) On the spectrum analyzer, set the centre frequency to 21.4 MHz, span to 2 MHz/division, reference level to 0 dBm, span to 10 dB/division, resolution bandwidth to 100 kHz and tracking generator on.

(5) Use L1, L2, L3 and L4 as necessary to tune the notch filter as shown in Fig. 3-16. L1 and L4 (pink) affect the notch depth, L2 (green) affects the LF slope and L3 (yellow) affects the HF slope.

(6) When the filter has been set, replace the interconnecting link between RX12 and RX11.

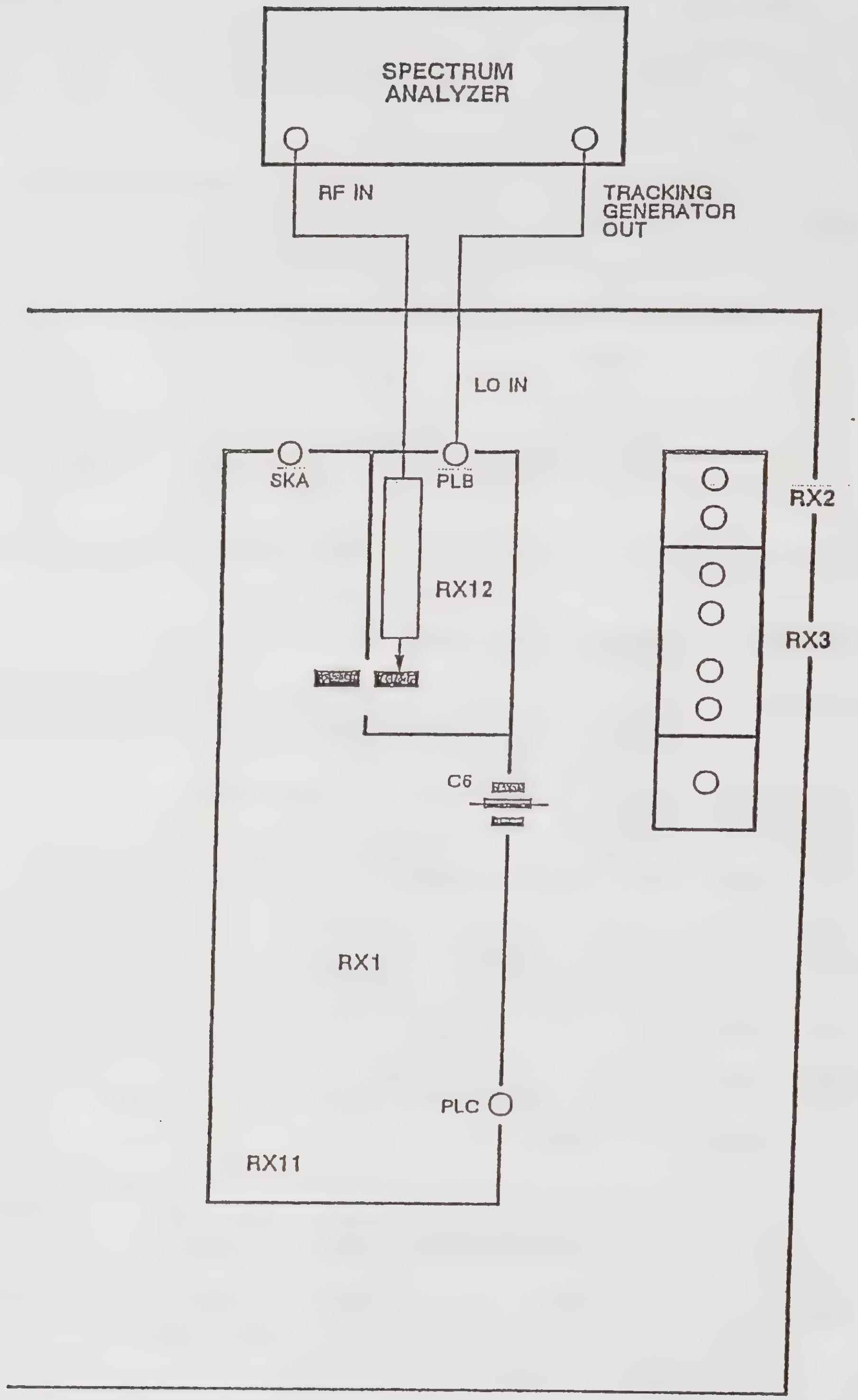


Fig. 3–15 Connections for adjustment of 21.4 MHz LO notch filter

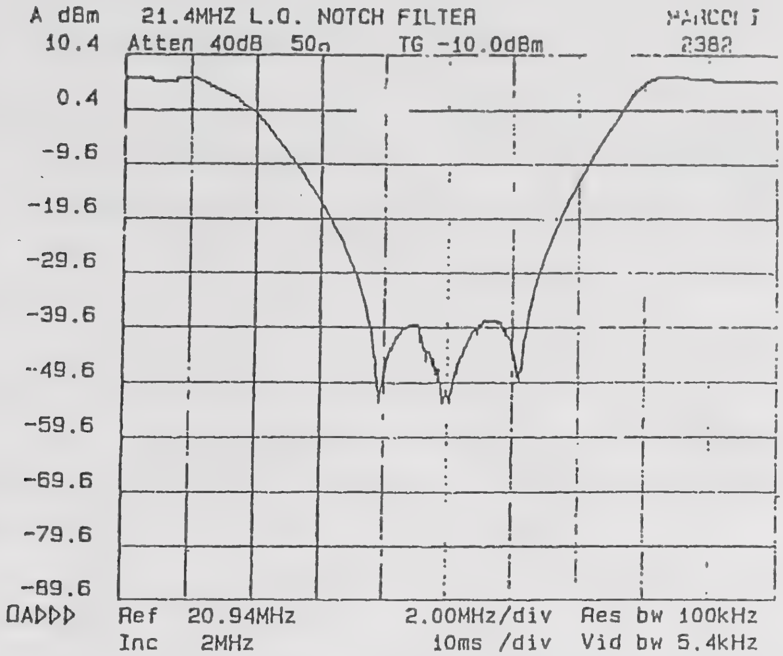


Fig. 3–16 Response of 21.4 MHz LO notch filter

20 dB IF 180 kHz band–pass amplifier

Test equipment: Spectrum analyzer (with tracking generator), RF signal generator, 50 dB attenuator pad, leads A, B and C to RX1 to lead A with an SMC plug (male) and an SMC socket (female), lead B with an SMC socket (female) and with a connector to the spectrum analyzer (tracking generator output), lead C with two SMA plugs (male), lead from the RF signal generator to the RF IN/OUT BNC socket, lead from the spectrum analyzer (tracking generator output) to the attenuator (if necessary), lead from the attenuator to the RF IN/OUT BNC socket.

Note...

When checking the response of the IF filter, ensure that the receiver tray lid is fully secured as this affects the response.

Before adjusting any of the presets, check the response as follows:–

(1) On the 2955B, set the MODE to TRANSMITTER MONITOR, the TRANSMITTER TEST FRE- QUENCY to 71.4 MHz, the RF IMAGE to LOWER, the IF FILTER to 180 kHz and the RF IN/OUT to the BNC socket.

(2) Using lead A, connect its SMC plug to the free end of the pipe to SKB on RX2 and connect its SMC socket to PLB on RX1. See Fig. 3–17.

(3) Using lead B, connect its SMC socket to PLC on RX1 and connect its other end to the spectrum analyzer (RF input).

(4) Using lead C, connect one SMA plug to SKB on RX3 and connect the other SMA plug to SKA on RX1.

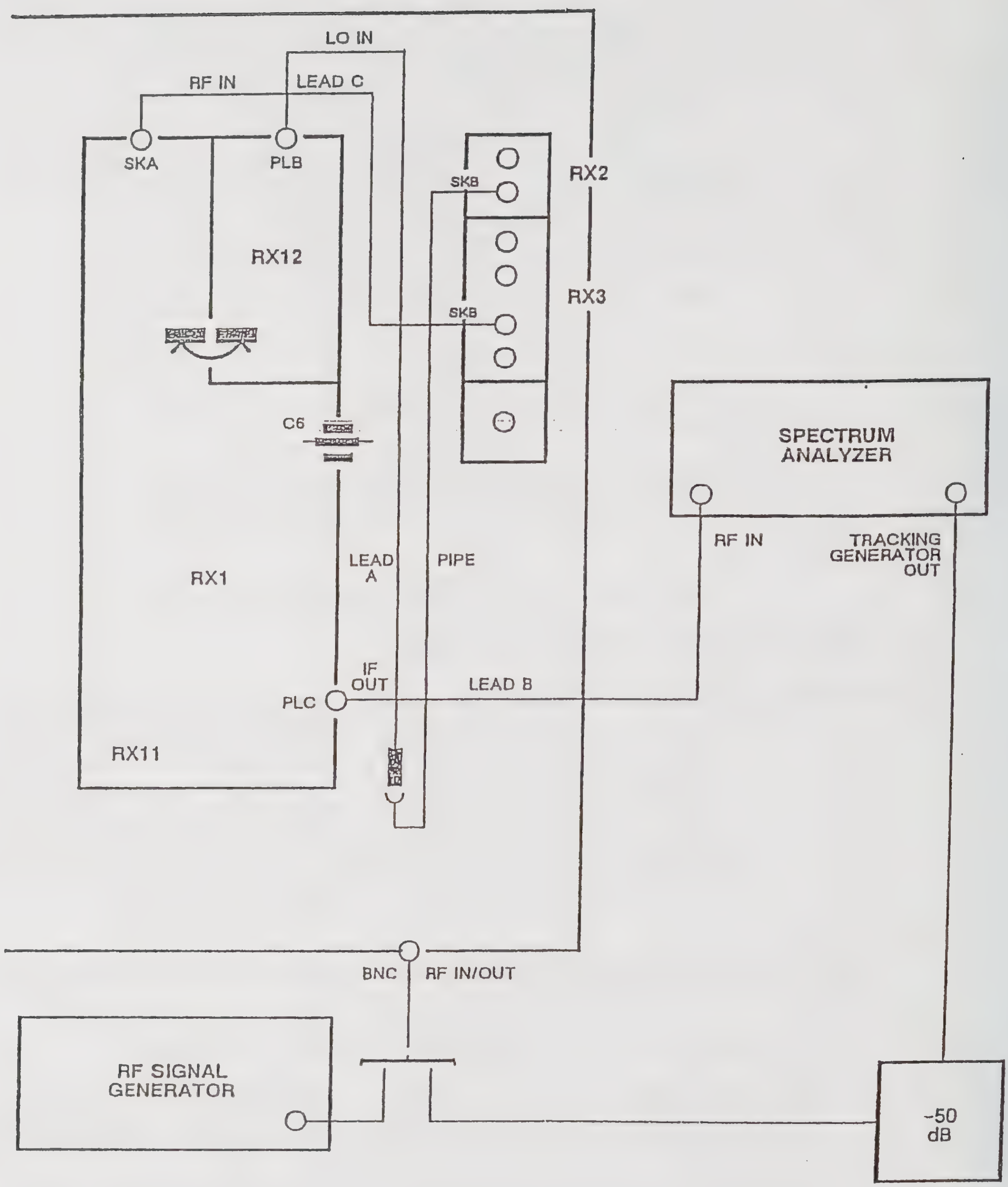


Fig. 3–17 Connections for checking 20 dB IF 180 kHz band–pass amplifier

(5) Connect the signal generator output to the RF IN/OUT BNC socket.

(6) Set the signal generator to 71.4 MHz and –20 dBm.

(7) Select the CALIBRATION MODE display by pressing in turn the HELP, TX MON ON-OFF, AC DC, VERT ⇕, FREQ ↓ and REP SWEEP keys.

(8) On the display, check that RANGE 2 is indicated. Press the HOLD RANGE key. 2 then appears in reverse video.

(9) Disconnect the signal generator.

(10) Connect the tracking generator output through the 50 dB attenuator to the RF IN/OUT BNC socket.

(11) Set the spectrum analyzer to 21.4 MHz, span to 50 kHz/division, reference level to –8 dBm, span to 1 dB/division, resolution bandwidth to 3 kHz, video bandwidth to 43 Hz and tracking generator on.

(12) Check that the response is as shown in Fig. 3–18 and that the 3 dB points give a bandwidth of 180 ±40 kHz.

(13) Reset the spectrum analyzer to 200 kHz/division and 10 dB/division.

(14) Check that the rejection at 1 MHz offset is >38 dB.

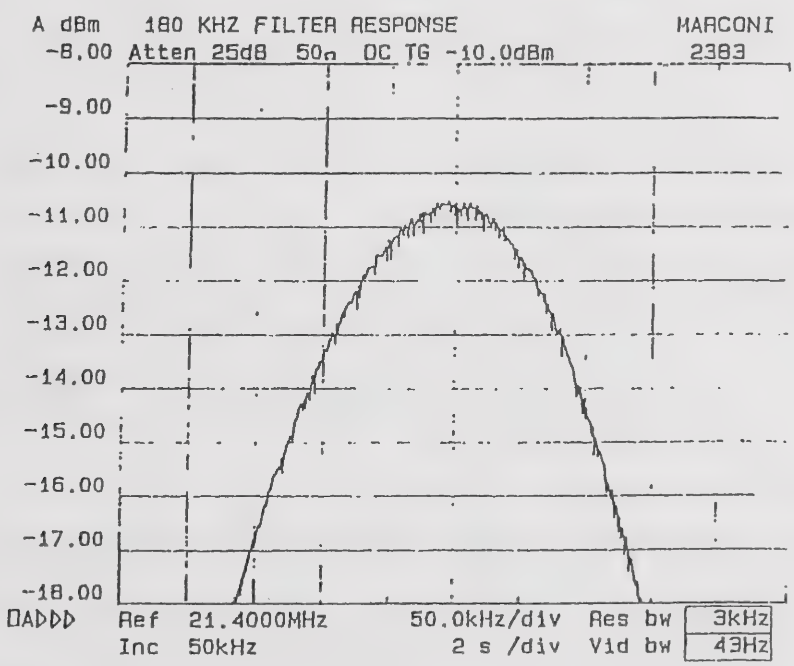


Fig. 3–18 Response of 20 dB IF 180 kHz band–pass amplifier (lid secured)

Note...

When adjusting the response, the receiver tray lid has to be removed. This affects the response by shifting the centre frequency downwards by approximately 50 kHz. The ideal response is as shown in Fig. 3–18. With the lid removed, the response is as shown in Fig. 3–19.

To adjust the response, proceed as in 'Bypass switch driver' and use C15, C18, C27 and C31 as necessary tune the filters as shown in Fig. 3–19. The 3 dB points should give a bandwidth of 180 ±40 kHz. After adjusting the response, replace the receiver tray lid and check that the response is now as shown in Fig. 3–18.

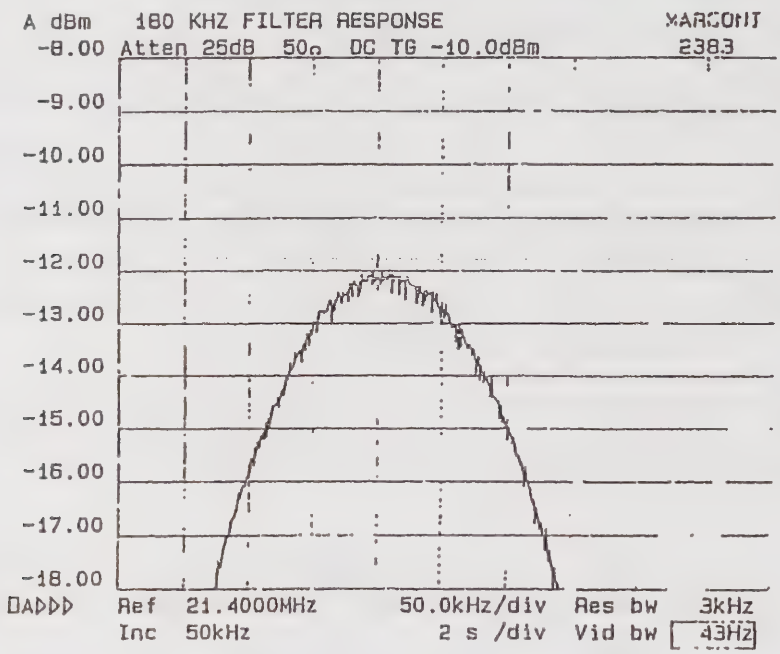


Fig. 3–19 Response of 20 dB IF 180 kHz band-pass amplifier (lid removed)

AGC and 38 dB amplifiers

Test equipment: Spectrum analyzer, RF signal generator, digital voltmeter, DVM probe, leads A, B and D to RX1 – lead A with an SMC plug (male) and an SMC socket (female), lead B with an SMC socket (female) and with a connector to the spectrum analyzer (tracking generator output), lead D with an SMA plug (male) and with a connector to the RF signal generator (RF out).

Proceed as follows:–

(1) Using lead A, connect its SMC plug to the free end of the pipe to SKB on RX2 and connect its SMC socket to PLB on RX1. See Fig. 3–20.

(2) Using lead B, connect its SMC socket to PLC on RX1 and connect its other end to the spectrum analyzer (RF input).

(3) Using lead D, connect its SMA plug to SKA on RX1 and connect its other end to the RF signal generator (RF out).

(4) Connect the DVM to C6 on RX1. C6 is connected to PLA pin 14 on RX11 (yellow wire). Earth the probe on the wall of the tray.

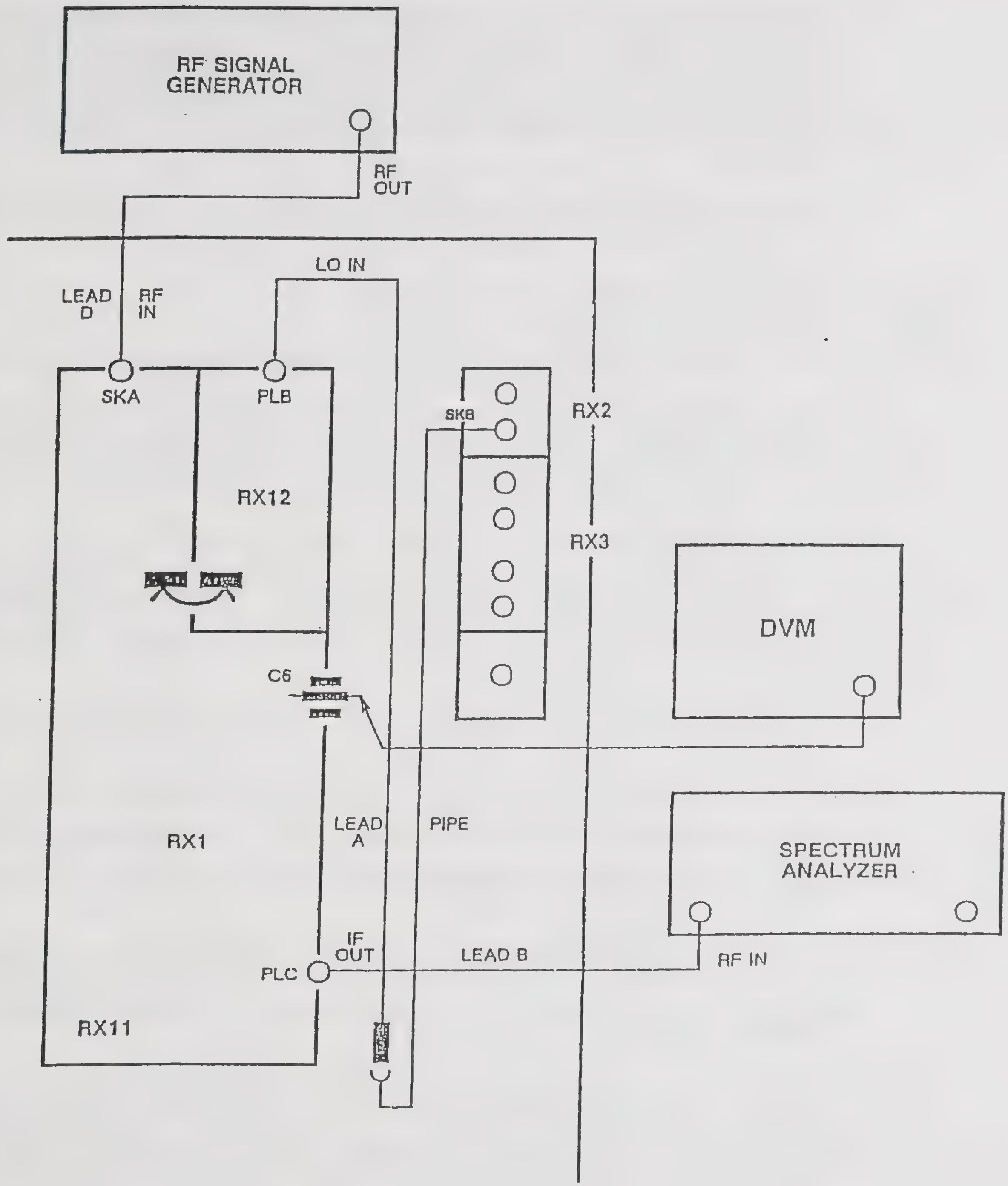


Fig. 3–20 Connections for AGC and 38 dB amplifiers

(5) Set the signal generator to a carrier frequency of 321.4 MHz and a level of −55 dBm.

(6) On the 2955R, set the MODE to TRANSMITTER MONITOR, the TX FREQUENCY to 321.4 MHz, and the IF FILTER to 12 kHz.

(7) Use the DVM (on DC) to check the AGC output (with respect to ground) at RX1 C6. On RX11, adjust R87, L16 and L19 for a maximum level. The level should be 3.2 to 4.5 V. If the level is less than 3.2 V, adjust R59 to reduce the IF output level. On the spectrum analyzer, check that the IF output level is not less than −2 dBm. If this is not possible, change the SIC resistor R63 to 300 kΩ.

(8) On the spectrum analyzer, check the IF output level. Adjust R59 to give 0 dBm ±1 dB.

Signal strength meter (internal software)

Test equipment: RF signal generator, lead with BNC male and N male connectors.

There are calibration factors for frequency and for level in the instrument's non-volatile memory (EAROM). This procedure consists of twenty stages in which these factors are corrected as necessary. To ensure accuracy, all inner and outer covers should be fitted. Remember to allow a warm-up of 30 minutes.

This procedure should take approximately 10 minutes. Instructions appear on the display to set frequencies and levels (PD) on the signal generator and to enter calibration data. An incorrect entry could result in the message TOO MANY ITERATIONS appearing. If this appears or if an error is suspected, abort the procedure and start again. Proceed as follows:–

(1) Set the signal generator to a carrier frequency of 300.01 MHz and an RF level of 800 μV PD.

(2) Connect the signal generator output to the RF IN/OUT BNC socket.

(3) In the TRANSMITTER MONITOR mode, select the CALIBRATION MODE display by pressing in turn the HELP, TX MON ON-OFF, AC DC, VERT ⇕, FREQ ↓ and REP SWEEP keys.

(4) Press the CALIBRATE soft key. The STAGE 1 display appears. The appropriate instructions are given in the lower part of the display. See Table 3-7. IN STAGE 1, to ensure that the temperature is stable, check that the TEMPERATURE ADC does not change.

(5) For each subsequent stage, press the CONTINUE soft key. When it is necessary to enter calibration data, the title of the ENTER soft key flashes. Enter new data using the DATA keypad. This data appears alongside the instruction. Press the ENTER soft key which changes to CONTINUE. In STAGE 2, the required data is 3.5. In STAGE 11, the required data is −0.162.

(6) After stage 20 or to abort at any time, press the EXIT soft key.

TABLE 3-7 SIGNAL STRENGTH METER CALIBRATION

Stage	Typical Signal Strength ADC	Range	Instruction
1	046	0	ENSURE TEMPERATURE IS STABLE THEN CONTINUE
2	046	0	ENTER LIFT FACTOR LO LIFT:- (LO output is 0 dBm at 100 kHz and entered dBm at 1000 MHz, normally 3.5)
3	046	0	CONNECT SIG GEN TO BNC AND SET FREQ TO 300.01 MHz
4	170	1	ADJUST LEVEL TO GET RANGE 1 AND STRENGTH 170 ±2
5	170	1	NOW ENTER SIG GEN LEVEL LEVEL:-
6	104	1	NOW SET SIG GEN LEVEL TO 'stage 5 entered level ÷8' WAIT FOR READING TO SETTLE
7	242	1	NOW SET SIG GEN LEVEL TO 'stage 5 entered level x 20' WAIT FOR READING TO SETTLE
8	180	0	NOW SET SIG GEN LEVEL TO 'stage 5 entered level ÷ 40' WAIT FOR READING TO SETTLE
9	222	2	NOW SET SIG GEN LEVEL TO 'stage 5 entered level x 30' WAIT FOR READING TO SETTLE
10	222	2	POKING CALIBRATION DATA . . . . COMPLETE
11	222	2	ENTER TEMP CAL FACTOR TEMP FACTOR:- (Normally -0.162)
12	130	1	NOW SET SIG GEN FREQ TO 100 kHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE
13	134	1	NOW SET SIG GEN FREQ TO 300 kHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE
14	135	1	NOW SET SIG GEN FREQ TO 1.01 MHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE
15	135	1	NOW SET SIG GEN FREQ TO 3.01 MHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE
16	136	1	NOW SET SIG GEN FREQ TO 10.01 MHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE
17	132	1	NOW SET SIG GEN FREQ TO 30.01 MHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE

continued...

TABLE 3–7 SIGNAL STRENGTH METER CALIBRATION (contd.)

Stage	Typical Signal Strength ADC	Range	Instruction
18	134	1	NOW SET SIG GEN FREQ TO 100.01 MHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE
19	132	1	NOW SET SIG GEN FREQ TO 300.01 MHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE
20	132	1	NOW SET SIG GEN FREQ TO 999.99 MHz AND LEVEL TO 300 μV WAIT FOR READING TO SETTLE

Chapter 4

INITIAL REPAIR

INTRODUCTION

If your instrument has become faulty, this chapter may help you to identify the problem and rectify the fault.

For some of the steps, access is necessary in accordance with 'Access to Boards and Units' in Chap. 2 of this Maintenance Manual.

INSTRUMENT NOT ACTIVE

If a display does not appear and there is no other sign that the instrument is active, check that the rear panel voltage range switch is in its correct position as under 'Power Requirements' in Chap. 2 of the Operating Manual.

If the voltage range switch has been set for 105 to 120 V and a higher voltage has been applied, the AC supply fuses FS1 and FS2 will have blown. Proceed as follows:-

(1) On the power supply board AR1/1, check Zener diode D23. If necessary, replace D23 or the complete board AR1/1.

(2) Set the voltage range switch correctly.

(3) Replace FS1 and FS2 on the rear panel by the appropriate values as under 'Power Requirements' in Chap. 2 of the Operating Manual.

If the voltage range switch has been set correctly, check the above fuses.

If the voltage range switch has been set correctly and the above fuses are unblown, proceed as follows:-

(1) Check the power supply board AR1/1 output voltages at connector PLE on the motherboard AB1/1. These should be (with respect to pins 8 and 9) -12 V on pin 2, -5 V on pin 3, +12 V on pin 4 and +5 V on pins 5 and 6.

(2) If any of the readings is incorrect, AR1/1 or one of its load circuits could be faulty. To check the latter, disconnect the supply lead from PLE. On PLE, check that the DC resistances (with respect to pins 8 and 9) are greater than 750 Ω for -12 V (pin 2), 1.4 kΩ for -5 V (pin 3), 25 Ω for +12 V (pin 4) and 320 Ω for +5 V (pins 5 and 6).

(3) If any of the loads is incorrect, try to isolate the fault by removing plug-in printed circuit boards and by disconnecting the following flying ribbon leads:-

    (a) RF tray to motherboard connector PLA.
    (b) RF tray to motherboard connector PLF.
    (c) Option 1 Rx tray to motherboard connector PLZ 9 (when fitted).

(4) If the loads are correct, AR1/1 is probably faulty. Replace it or refer to it in Chap. 5. Refit the boards and disconnected leads.

INSTRUMENT ACTIVE BUT NO DISPLAY

If instrument otherwise seems to be active but there is no display, check the fuse FS4 which is in the DC +12 V supply line from the motherboard AB1/1 to the CRT drive board AC1.

If the above fuse has blown, remove the CRT base board AT2 and check on AC1 that the DC resistance (with respect to pin 4) is not less than 1kΩ for +12 V (pin 2) after 5 seconds.

If the DC resistance is too low, replace AC1 or refer to it in Chap. 5.

If the DC resistance is satisfactory, replace FS4. Refer to Chap. 6. Refit AT2.

INSTRUMENT ACTIVE BUT DISPLAY CONSISTS OF RANDOM CHARACTERS

Check that the microprocessor board AB4/2 is correctly inserted in its socket.

Check that all the plug-in ICs on AB4/2 are corrected inserted in their sockets.

Remove the VDU board AB3/2 and check that all its plug-in ICs are correctly inserted in their sockets.

If the fault continues, refer to AB4/2 and AB3/2 in Chap. 5.

INSTRUMENT FAILED ALL SELF TESTS

Refer to 'Self Testing' in Chap. 3 of the Operating Manual and Chap. 1 of this Maintenance Manual.

It is most probable that there is a fault associated with one of the following:-

(a) Attenuator assembly AD0 (except Option 1).
(b) Attenuator and switch assembly RX2 (Option 1 only).
(c) Input switching assembly AC0/2.

Check the continuity of these items. If a fault is found in one of the assemblies, replace it.

INSTRUMENT FAILED SELF TESTS 1.0 TO 1.4.

In these tests, the output from the RF synthesizer board AA3 is measured on the RF counter board AA2. See Fig. 4-1.

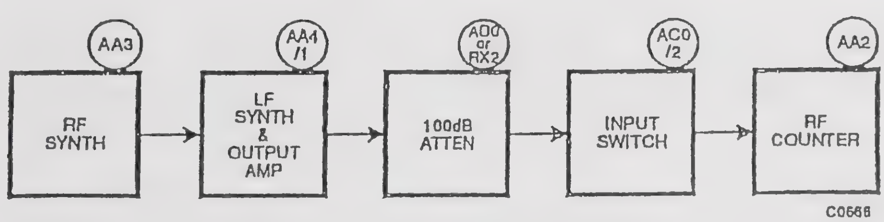


Fig. 4-1 Circuits for self tests 1.0 to 1.4

If the instrument fails tests 1.0 to 1.4 but passes tests 2.0 to 2.3, it is most probable that there is a fault on AA2.

INSTRUMENT FAILED SELF TESTS 2.0 to 2.3

For these tests, the RF power which is measured on the microprocessor board AB4/2 is compared with the output from the RF synthesizer board AA3. See Fig. 4-2.

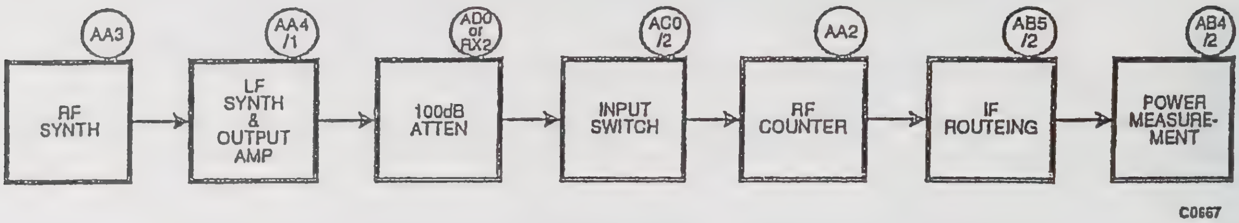


Fig. 4-2 Circuits for self tests 2.0 to 2.3

There are additional circuits as follows:-

(a) RF modulation meter board AA1.
(b) Demodulation and scope board AB5/2, IF routeing.
(c) Microprocessor board AB4/2, Power measurement.

If the instrument passes tests 1.0 to 1.4 and fails tests 2.0 to 2.3, it is most probable that there is a fault in these circuits.

For the following check, the instrument has to be in test 2.0. Initiate each individual test by repeatedly using the NEXT TEST key. Step through 1.0 to 1.4 and stop at 2.0.

Check the signal from the IF OUT socket on the rear panel. There should be an IF of 110 kHz in addition to 10 MHz. If this is present, check for the IF at TP1 on AB5/2. If the IF is not present here, check the lead from the RF tray to the motherboard. If a board is found to be faulty, replace it or refer to it in Chap. 5.

INSTRUMENT FAILED SELF TESTS 3.0 TO 3.3

For these tests, modulation generation and measurement circuits are tested. See Fig. 4-3.

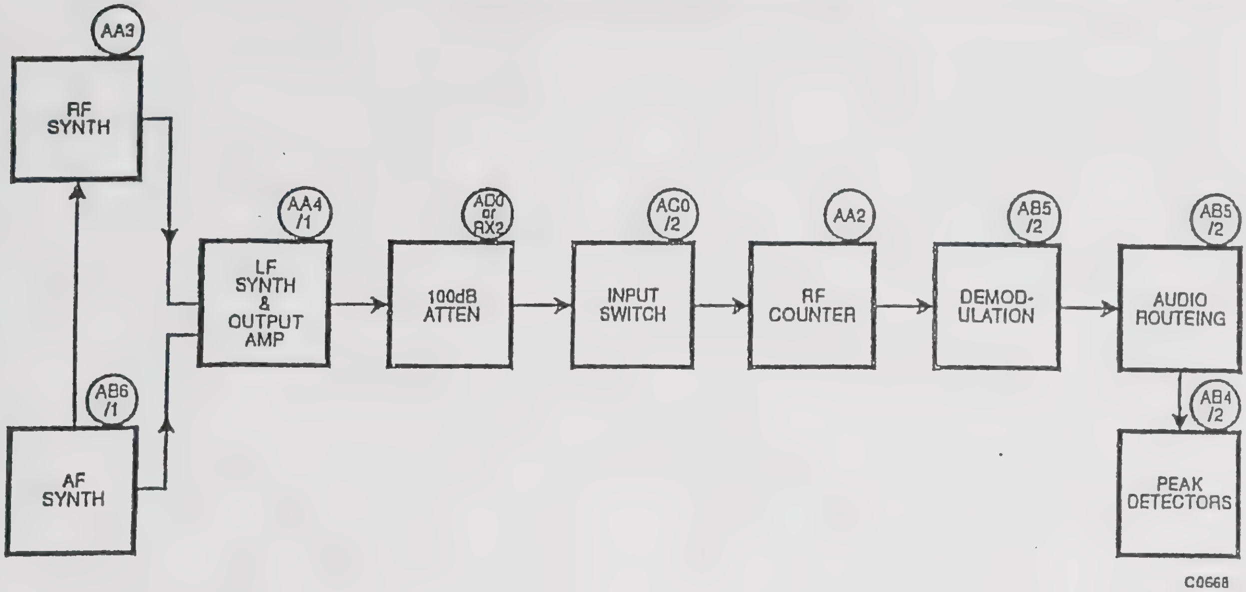


Fig. 4-3 Circuits for self tests 3.0 to 3.3.

There are additional circuits as follows:-

(a) AF synthesizer board AB6/1.
(b) Demodulation and scope board AB5/2, Demodulation.
(c) Demodulation and scope board AB5/2, Audio routeing.
(d) Microprocessor board AB4/2, Peak detectors.

If the instrument passes tests 1.0 to 1.4, passes tests 2.0 to 2.4 and fails tests 3.0 to 3.3, it is most probable that there is a fault in these circuits.

To check AB6/1, AB5/2 and AB4/2, connect the AF GEN OUTPUT socket to the AF INPUT socket on the front panel. Select the AUDIO TEST mode. Check that the appropriate AF signal is being generated and measured.

If the AUDIO TEST circuits are correct, it is probable that there is a fault in the demodulation circuits on AB5/2 or in the modulation drive circuits on AB6/1. If a board is found to be faulty, replace it or refer to it in Chap. 5

Chapter 5

FAULT DIAGNOSIS

INTRODUCTION

General procedure

This chapter is intended as a guide to localizing any problem to one component or a small group of components.

Fuse replacement

Three cartridge-type fuses are located on the rear panel. For fuse ratings, see under 'Power requirements' in the Operating Manual.

Transistor and diode checking

Transistors can be checked by measuring the electrode voltages and/or by measuring the resistance between electrodes by means of a multimeter. So that the meter voltage does not damage the transistors or diodes, use the lowest voltage and the maximum source resistance available, e.g. the x10 Ω range on the AVO 8 or the SEI Selectest Super 50.

Board testing

The board tests can be used for fault finding to component level as well as being used to ensure correct board operation following repair or replacement. When testing at board level, note that the various tests are carried out sequentially. This often means that test equipment and instrument settings for the second and subsequent tests in a sequence are dependent upon those used for the first test in the sequence.

RF MODULATION METER BOARD AA1

Test equipment : Signal generator, oscilloscope, frequency counter.

Circuit diagram: Chap. 7, Figs. 7-6 and 7-7.

Proceed as follows:-

Preliminary

(1) Connect the signal generator, set to 13.6 MHz and 0 dBm (224 mV RMS), to the RF IN/OUT BNC socket. Select TRANSMITTER TEST and set the frequency to 13.6 MHz.

Regulators

(2) Check that the –9 V output from IC5 pin 1 and the +5 V output from IC7 pin 3 are within ±0.5 V of the stated voltage.

Phase locking operation

(3) Connect the oscilloscope to the 10 MHz input at PLB and check for 10 MHz at TTL levels. Transfer to TR1 emitter and check for a 10 MHz sinewave at 200 mV pk-pk. This checks the 10 MHz filter.

(4) Check the junction of C6/C7/L2 for a sinewave of 3.71 MHz at 1.5 V pk-pk. This checks the mixer operation.

(5) Check the junction of L3/C9/R17 for a 3.71 MHz pure sinewave of 0.7 V pk-pk. This checks the operation of the 4.4 MHz LP filter. If the amplitude is low, the mixer has to be adjusted before proceeding. See under 'Mixer 10 MHz rejection' in Chap. 3.

(6) Connect to TR3 collector (can) and check for a 0 to 5 V squarewave. This checks the squaring amplifier.

(7) Connect the oscilloscope (or counter) to IC1 pin 12 and check that its frequency is 1/16th that on pin 1 (10 MHz). This checks the frequency divider.

(8) Connect the oscilloscope, set to 1 ms per division, to TP1 and check for one of three conditions:-

(a) In lock and operating correctly: Small 'pips' of either polarity at a frequency of 265 Hz.

(b) In lock but not operating correctly: Pulses (typically 1.75 V) at 265 Hz. The balance has to be adjusted before proceeding. See under 'Phase detector balance' in Chap. 3.

(c) Out of lock: A 180 mV pulse train of either polarity with varying mark/space ratio.

(9) Transfer the oscilloscope to the junction of R41/C28/R42. Set the frequency to 11.4 MHz and check that the DC level is +2 V. Set the frequency to 13.6 MHz and check that the level changes to –7 V. This checks the PLL filter formed by IC4.

(10) Reset the frequency to 13.6 MHz. Connect to TR6 collector (can) and check for a square wave of 3.6 V pk–pk at 13.71 MHz. This checks the VCO and squaring amplifier.

Mixer

(11) Set the signal generator to 55.6 MHz and select AUTO TUNE on the 2955B. Connect the oscilloscope to the IF OUTPUT at PLC. Adjust R11 for minimum distortion (i.e. cleanest sinewave).

20 dB pad

(12) Reset the signal generator to 13.6 MHz. Check the RF INPUT at the junction of R57/R58 for 316 mV pk–pk. Transfer to the junction of R57/R59 and check for 31 mV pk–pk.

Selection logic

(13) Check IC6 pin 2 is low and IC6 pins 4 and 10 are both high. Check IC6 pin 6 for a 13.71 MHz signal at TTL levels.

(14) Transfer to TR14 collector and check for 0 V.

(15) Set the frequency to 14 MHz. Check IC6 pin 2 is high, IC6 pin 10 is low and IC6 pin 5 is high. Check IC6 pin 6 for a 3.71 MHz signal at TTL levels.

(16) Transfer to TR14 collector and check for –9 V.

Mixer and output

(17) Reset the frequency to 13.6 MHz. Connect the oscilloscope to TR8 collector and check for a good square wave from the Schmitt trigger.

(18) Check at the junction of L12/C62/R77 for a pure 110 kHz sine wave at the same level as that at the junction of R57/R59. This checks the operation of the sampling gate mixer, buffer and LP filter.

(19) Check the IF OUTPUT at PLC and the MONITOR OUTPUT at PLE for a 110 kHz sinewave at 2.8 V pk–pk. This checks the operation of the VCO amplifier and the IF monitor respectively.

RF COUNTER BOARD AA2

Test equipment : Signal generator, oscilloscope.

Circuit diagram: Chap. 7, Fig. 7-9.

Proceed as follows:-

Preliminary

(1) Connect the signal generator, set to 10 MHz and 0 dBm (224 mV RMS), to the RF IN/OUT BNC socket. Select TRANSMITTER TEST set the frequency to 10 MHz.

Signal input path

(2) Connect the oscilloscope to the SIGNAL INPUT at R6 and display the sinewave. Increase the signal generator output level to 11 dBm and check that the displayed level drops by 9 dBm. This checks the 20 dB pad and switching.

(3) Set the signal generator to -10 dBm. Check that the signal on IC2 pin 5 is six times the amplitude of the signal on IC1 pin 1. This checks the operation of the 16 dB amplifier.

(4) Check the junction of C16/R17/C17 for a square wave of 1 V pk-pk. This checks the Schmitt trigger.

(5) Check IC7 pin 14 for 10 MHz at ECL levels. Change the signal generator frequency to 210 MHz and check for $f_{in}/4$. This checks the operation of the prescaler and bypass switching.

BCD counters

(6) Check IC7 pin 16 for low 400 ms gating periods. Change the signal generator frequency to 10 MHz and check that the gating periods have changed to 100 ms (10 Hz resolution selected).

(7) Check IC5 pin 14 for $f_{in}/10$ at TTL levels. Change the signal generator frequency to 210 MHz and check for $f_{in}/40$. This checks the level shifter and first BCD counter.

(8) Check TP2 for $f_{in}/80$. Change the signal generator frequency to 10 MHz and check for $f_{in}/20$. This checks the second BCD counter.

7-element counter

(9) Check IC4 pin 19 for high reset pulses occurring every 120 ms. Change the signal generator frequency to 210 MHz and check that the pulses occur every 400 ms.

(10) Transfer to TP1 and check for a squarewave of 3.8 µs period. Change the signal generator frequency to 10 MHz and check that the squarewave changes to a 20 µs period.

(11) Vary the frequency of the signal generator and check for 'random' data on IC4 pins 1 to 4. This checks the data sent to the processor.

RF SYNTHESIZER AND OSCILLATOR BOARD AA3

Test equipment : Oscilloscope, power source, frequency counter, spectrum analyzer.

Circuit diagram: Chap. 7, Figs. 7-11 and 7-12.

Proceed as follows:-

Regulators

(1) Check that the −9 V line at TP4 and the +9 V line at TP5 are within ±0.5 V of the stated voltage.

Oscillator switching

(2) Select RECEIVER TEST and set the frequency to 500 MHz. Check that the AA0 OSC SELECT inputs at feedthrough capacitors C43 and C44 are both low (−9 V). Check at their collectors that TR13 is on (−8.5 V) and TR2 and TR6 are both off (0 V). Change frequency to 900 MHz and check that the levels are unaltered. This checks the oscillator selection for the 165 to 530 MHz frequency range.

(3) Change frequency to 300 MHz. Check that C43 is low (−9 V), C44 is high (0 V), TR6 is on and TR2 and TR13 are both off. Change frequency to 600, 700, 150 and 70 MHz and check in turn that the levels are unaltered. This checks the oscillator selection for the 530 to 630 MHz frequency range.

(4) Change frequency to 200 MHz. Check that C43 is high (0 V), C44 is low (−9 V), TR2 is on and TR6 and TR13 are both off. Change frequency to 100 then 50 MHz and check in turn that the levels are unaltered. This checks the oscillator selection for the 630 to 1000 MHz frequency range.

Oscillator tuning

(5) Disconnect PLD. Connect the power source, initially set to 3 V, to R3 input. Connect the counter to TP3 to measure oscillator frequency divided by 100.

(6) Set the 2955B frequency in turn to 200, 300 and 500 MHz, each time varying the power source voltage between 3 and 18 V while checking that each oscillator operates over its full frequency range. Replace PLD.

Filter switching

(7) Set the frequency to 200 MHz. Check that the AA0 FILT CONTROL inputs at feedthrough capacitors C45 and C46 are both low. Check at their collectors that TR4, TR11 are both on (−12 V) and that TR3, TR7, TR8, TR9 are all off. This checks the filter switching for the 165 to 530 MHz range.

(8) Change frequency to 550 MHz. Check that C45 and C46 are both high. Check that TR3, TR7, TR9 are all on and that TR4, TR8, TR11 are all off. This checks the filter switching for the 530 to 630 MHz range.

(9) Change frequency to 650 MHz. Check that C45 is low and C46 is high. Check that TR3, TR8, TR9 are both on and that TR4, TR7, TR11 are all off. This checks the filter switching for the 630 to 1000 MHz range.

Filter operation

(10) Connect the spectrum analyser to the output from C96.

(11) Set the frequency to 165 MHz. Check that the pass band is flat within ±5 dB up to 259 MHz. Check that all harmonics are at least 36 dB down. This checks the 265 MHz LP filter.

(12) Change the frequency to 260 MHz. Check that the pass band is flat within ±5 dB up to 399 MHz. Check that all harmonics are at least 32 dB down. This checks the 410 MHz LP filter.

(13) Change the frequency to 400 MHz. Check that the pass band is flat within ±5 dB up to 529 MHz. Check that all harmonics are at least 30 dB down. This checks the 560 MHz LP filter.

(14) Change the frequency to 530 MHz. Check that the pass band flatness from 520 to 629 MHz is within ±6 dB. Check that all harmonics and sub-harmonics are at least 34 dB down. This checks the 520 MHz HP and 630 MHz LP filters.

(15) Change the frequency to 630 MHz. Check that the pass band flatness from 630 to 799 MHz is within ±6 dB. Check that all harmonics and sub-harmonics are at least 34 dB down. This checks the 520 MHz HP and 820 MHz LP filters.

(16) Change the frequency to 800 MHz. Check that the pass band flatness from 800 to 1000 MHz is within ±6 dB. Check that all harmonics are at least 15 dB down and that all sub-harmonics are at least 32 dB down.

Output amplifier

(17) Remove the coupler between boards AA3 and AA4/1. Using a spectrum analyzer and signal injector, check that IC4 output is −15 to −8 dBm over all frequency ranges (including doubled ranges) of the oscillators. Replace the coupler.

Divider amplifier and divider chain

(18) Set the frequency to 165 MHz. Check, using the spectrum analyzer, that the gain of the amplifier from the junction of R14/C6 to IC112 pin 12 is greater than 14 dB.

(19) Set the 2955B to 165, 259, 260, 399, 400 and 529 MHz in turn and check at TP3 for these frequencies divided by 100.

(20) Check TP3 for oscillator frequency divided by 100 (i.e. 1.65 to 5.3 MHz) at CMOS levels.

(21) Check TP1 for 40 to 60 Hz negative-going pulses. Transfer to TP2 and check for 4 to 6 kHz square waves.

FIFO memories

(22) Check for a positive 1.4 ms program enable pulse from IC103 pin 10.

(23) Connect the oscilloscope to SHIFT OUT from IC103 pin 4. Check for a train of pulses occurring each time the frequency is changed. The train consists of 7 pulses each of 0.1 ms duration occurring in 1.4 ms.

(24) Set the frequency to 300 MHz. Check that IC104 pin 4 is low and pins 1,2,3 are all high. Transfer to IC101 and check that pins 1 and 3 are low and pins 2 and 4 are high.

LF modulation amplifier

(25) Check the LF modulation amplifier and, if necessary, adjust it as given under 'Low frequency external FM' in Chap. 3.

Phase locking

(26) Check IC106 pin 22 for a 10 MHz input, and pin 26 for a 5 kHz output. This checks the internal divider.

(27) Set the frequency to 200 MHz and check that LED D106 is unlit. Increment the frequency to 210 MHz while observing the LED. Check that the LED flashes then goes out again. This checks phase lock operation with the 165 to 260 MHz oscillator.

(28) Repeat the above test at 320 and 330 MHz to check the 260 to 400 MHz oscillator, and at 490 and 500 MHz to check the 400 to 530 MHz oscillator.

Loop amplifier

(29) Check for +22 V on IC107 pin 7.

(30) Set the frequency to 165 MHz and check at IC107 pin 6 for 3 V. Change frequency to 259 MHz and check that the level has changed to 17 V.

LF SYNTHESIZER AND OUTPUT AMPLIFIER BOARD AA4/1

Test equipment : Oscilloscope, frequency counter, spectrum analyzer.

Circuit diagram: Chap. 7, Figs. 7–14 and 7–15.

Proceed as follows:–

Switching

(1) Select RECEIVER TEST and set the frequency to 50 MHz and check that the AA0 LF RANGE inputs at feedthrough capacitors C37 and C36 are both high. Check that TR1, TR8 are both on and that TR2, TR3 are both off (TTL levels). This checks the 0.4 to 88 MHz range.

(2) Change frequency to 100 MHz. Check that C37 is high and C36 is low. Check that TR1, TR3 are both on and that TR2, TR8 are both off. This checks the 88 to 165 MHz range.

(3) Change frequency to 200 MHz. Check that C37 and C36 are both low. Check that TR2 is on and that TR1, TR3, TR8 are all off. This checks the 165 to 1000 MHz range.

Phase comparator dividers

(4) Connect the counter to IC11 pin 5 and check that its frequency is ½ that of the 10 MHz on pin 3. Connect to IC10 pin 4 and check that its frequency is $\frac{1}{20}$ that of the 200 MHz on pin 8. Transfer to IC11 pin 9 and check that its frequency is ½ that of the 10 MHz on pin 11.

200 MHz oscillator

(5) Set the frequency to 20 MHz and check that TR6 is switched on (–12 V on the collector).

(6) Connect the counter to the junction of C57/R37 and check for 200 MHz. If the frequency does not lock the oscillator has to be adjusted before proceeding. See under '200 MHz oscillator setting' in Chap. 3).

Mixer

(7) Check that the input on pin 2 of mixer IC6 is at –13 dBm. Transfer to the mixer side of C33 and check for +6 dBm.

18 dB amplifier

(8) Connect the spectrum analyzer to the junction of R7/C7/D6 and set a reference level. Transfer to the mixer side of C33 and check for an 18 dB gain.

Divider operation

(9) Change the frequency to 100 MHz. Connect the counter to IC2 pin 6 and check that its frequency is ½ that of the 200 MHz on pin 1.

Filter operation

(10) Set the frequency to 1000 MHz and the output level to +5 dBm. Check that the ALC voltage on TP2 from 165 to 1000 MHz is within 0 to 3 V. Check that all harmonics are at least 20 dB down and all subharmonics are at least 30 dB down.

(11) Change the frequency to 164 MHz and check that the ALC voltage on TP2 from 88 to 164 MHz is within 0 to 3 V. Check that all harmonics are at least 30 dB down.

(12) Change the frequency to 87 MHz and check that the ALC voltage on TP2 from 0.4 to 87 MHz is within 0 to 3 V. Check that all harmonics and spurii are at least 25 dB down.

ALC operation

(13) Check TP2 for an ALC voltage ranging from +0.25 to +3 V (normally, well below +2 V over all ranges with +5 dBm/-15 dBm selected).

Output amplifier and attenuator

(14) Set the to 10 MHz and -45 dBm.

(15) Check that the level at IC8 pin 9 (1.2 V pk-pk) is 30 to 40 times the measurement at the junction of C3/R5/D7 and 100 times the measurement at the junction of R9/D11.

(16) Check that the level at the junction of R46/C66 is ½ that at IC8 pin 9.

(17) Check that the level at the board output is ⅓ that at the junction of R46/C66 (i.e. 10 dB lower).

(18) Select -35 dBm and check that the output level is 3.3 times greater (i.e. 10 dB higher).

MOTHERBOARD AB1/1

Test equipment : Oscilloscope, power source, signal generator.

Circuit diagram: Chap. 7, Figs. 7–17 and 7–18.

Proceed as follows:–

Audio amplifier

(1) Select RECEIVER TEST and press AF GEN to enter AUDIO TEST. Set the AF generator output level to 1 V. Connect the AF GEN OUTPUT socket to the AF INPUT socket and check for an audible output. This checks the operation of TR7 and IC13 as well as the loudspeaker.

Overheat logic

(2) Turn the VOLUME control to minimum. Connect a 12 kΩ resistor between earth and PLM contact 2 in order to simulate an overheat condition. Check that IC5 pin 5 goes low and that IC5 pins 6 and 11 are both taken high. (The screen should flash followed after a delay by an audible warning.) This checks Schmitt trigger IC6a.

Overpower logic

(3) Connect the power source set to –1 V to PLM contact 4. Check that IC5 pins 3 and 6 go low and that PLM contact 9 goes high. Repeat the checks with a +1 V input to PLM contact 8. This checks Schmitt trigger IC6b.

Bistable IC14 operation

(4) The operation of bistable IC14 and selector IC11can be checked as (5) to (7).

(5) Set the frequency to 50 MHz and check that the AA0 LF RANGE inputs at feedthrough capacitors C37 and C36 are both high (TTL levels). Change frequency to 100 MHz and check that C37 is high and C36 is low. Change frequency to 200 MHz and check that C37 and C36 are both low.

(6) With the frequency at 200 MHz, check that the AA0 FILT CONTROL inputs at feedthrough capacitors C45 and C46 are both low. Change frequency to 550 MHz and check that C45 and C46 are both high. Change frequency to 650 MHz and check that C45 is low and C46 is high.

(7) Set the frequency to 500 MHz and check that the AA0 OSC SELECT inputs at feedthrough capacitors C43 and C44 are both low. Change frequency to 300 MHz and check that C43 is low and C44 is high. Change frequency to 200 MHz and check that C43 is high and C44 is low.

Bistable IC15 operation

(8) The operation of bistable IC15 and selecter IC11 can be checked as (9) to (11).

(9) Continuously change the frequency using the VARIABLE control while checking for 'random' data (negative-going pulses) on the AA0 D0 to D3 outputs at feedthrough capacitors C49, C51, C52, C53.

(10) Continuously change the frequency using the VARIABLE control while checking for a train of seven +9 V pulses, each of 75 µs duration on the AA0 SI(1) input at feedthrough capacitor C54. Check that this train is followed by a similar pulse train on the AA0 SI(2) output at C56.

(11) Continuously change the frequency using the VARIABLE control while checking for a +9 V 450 µs pulse on the AA0 SYNTH ENABLE output at feedthrough capacitor C55.

0–10 dB selection

(12) Set the level to −36 dBm and check that the AA0 0–10 dB output at feed-through capacitor C35 is high. Change the level to −46 dBm and check that C35 is low.

Bistable IC9 operation

(13) The operation of bistable IC9 and selector IC11 can be checked as (14) to (20).

(14) Switch the frequency between 11.4 and 13.6 MHz each time checking for four 0.1 ms +9 V pulses at 2 ms separation on the AA0 SYNTH ENABLE output at feedthrough capacitor C6.

(15) Set the frequency to 13.6 MHz and check that the AA0 HIGH/LOW output at feed– through capacitor C1 is low. Change frequency to 14 MHz and check that C1 is high.

(16) Connect the signal generator set to 10 MHz, +5 dBm to the BNC RF IN/OUT socket. Select TRANSMITTER TEST mode. Check that the AA0 −4/−1 output at feedthrough capacitor C14 is high. Change the generator frequency to 300 MHz and check that C14 is low.

(17) With the signal generator at 0 dBm, check that the AA0 20 dB IN/OUT output at feedthrough capacitor C13 is high. Increase the signal generator output to greater than +13 dBm and check that C13 is low.

(18) Check on the AA0 ENABLE COUNTER output at feedthrough capacitor C15 for a low 5 ms pulse followed by a high period of fixed duration.

(19) With 10 Hz counter resolution selected, set the frequency to 210 MHz and check that the high period is 400 ms. Change frequency to 10 MHz and check that the period has changed to 100 ms.

(20) Press HELP then CHANGE PARAMETERS and set the RF COUNTER RESOLUTION to 1 Hz. Check that the high period is now 1 s.

Keyboard interrupt

(21) Check at SKC 1a for a low logic level. Press the front panel keys in turn and check each time that the level goes high, with the initial 40 ms consisting of negative-going 40 μs pulses. This checks the operation of IC1, IC2, IC3 and IC4.

DTMF decoder

(22) Select AUDIO TEST and then the TONES menu and DTMF. Connect the AF GEN OUT socket to the AF IN socket. Load up a number sequence and check it is received correctly. During reception, IC19 pins 10 and 15 should change and the received sequence should be audible from the loudspeaker.

DIGITAL SCOPE BOARD AB2/2

Test equipment : Oscilloscope.

Circuit diagram: Chap. 7, Figs. 7-20 and 7-21.

Proceed as follows:-

Trigger pulse generation

(1) Select RECEIVER TEST and press the AF GEN and SCOPE keys. Set the AF generator to 20 Hz and connect the AF GEN OUTPUT socket to the AF INPUT socket. Press the REP SWEEP key.

(2) Connect the oscilloscope to IC34 pin 13 and check for a 20 Hz square wave. This checks IC48b.

(3) Connect the oscilloscope second channel to IC34 pin 5 to display the output from IC31. Check that the falling edges of both signals are coincident. This checks that IC31 is being reset.

(4) Remove the input to the AF INPUT socket and check that the output from IC31 has changed to a 225 ms period squarewave. This checks the IC31 auto-trigger function. Replace the input to the RF INPUT socket.

(5) Check that IC27 pin 8 is high and that the trigger waveform is present on IC34 pin 6 and IC23 pin 3. This checks the repetitive sweep gating.

(6) Press the SINGLE SWEEP key and check that IC34 pin 4 is low and IC34 pin 6 is high. This checks the single sweep gating.

(7) Remove the input to the AF INPUT socket. Press SINGLE SWEEP and check that IC48 pin 10, IC23 pin 8 and IC23 pin 5 are all high. This checks the reset operation.

(8) Check that IC27 pin 12 and IC27 pin 3 are both high. This checks that the timing generator has halted.

(9) Check that the write address outputs from IC17 and IC18 are all low. This checks that the write address counters have correctly reset. Replace the input to the AF INPUT socket and press REP SWEEP.

A D converter

(10) Check the voltage reference for the A D converter and, if necessary adjust it as under board AB2/2 in Chap. 3.

(11) Check TP1 for a 0.5 μs positive pulse at a 400 kHz rate.

(12) Vary the vertical shift while checking that the output from latch IC2 changes (TTL levels).

Timing generator

(13) Check the operation of the timing generator as shown in Fig. 5-1.

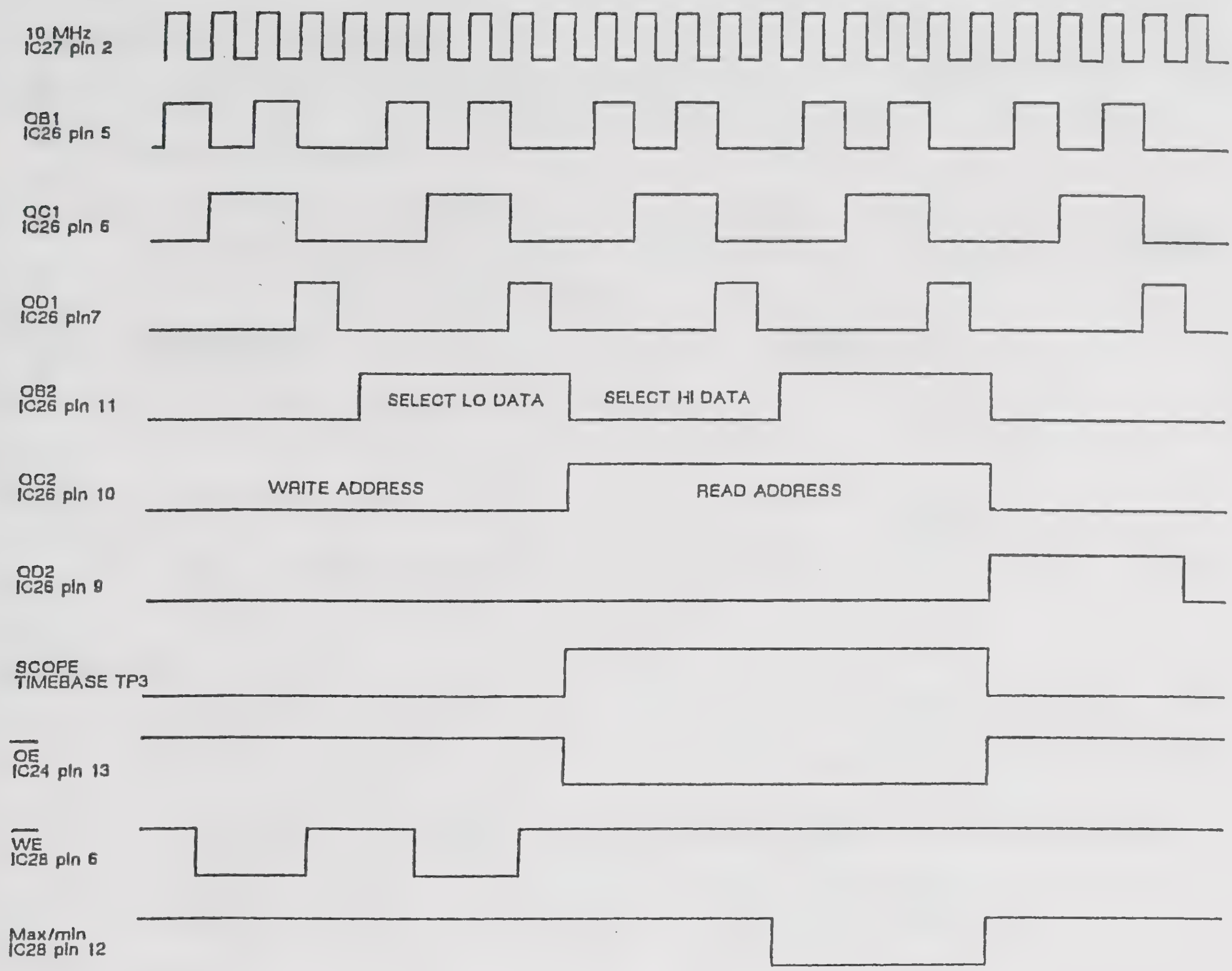


Fig. 5-1 Board AB2/2 timing generator timing

Read address reset

(14) Set the horizontal POSITION control fully anticlockwise. Trigger from IC24 pin 6 and check for a high reset pulse on IC24 pin 1. Adjust the POSITION control and check that the width of the reset pulse decreases from the left.

Display counters

(15) With an input connected to the AF INPUT socket, check the operation of decoder IC48a as shown in Fig. 5-2.

(16) Set the input to 10 kHz and select a slow timebase. Trigger an oscilloscope from the falling edge of the Y1 pulse on IC48 pin 5 and display the SCOPE VIDEO signal on TP6. Check that the signal starts high, goes low and then returns high, all within the line scan period of 64 μs.

(17) Vary the amplitude of the input and check that the duration of the low period increases and decreases with amplitude.

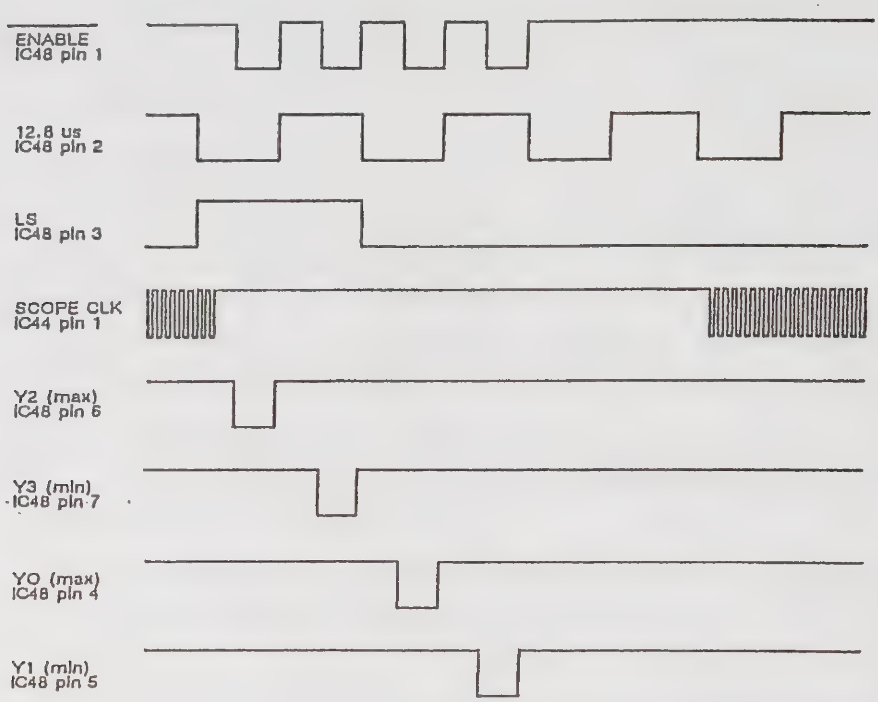


Fig. 5-2 Board AB2/2 display counters timing

VDU BOARD AB3/2

Test equipment : Oscilloscope.

Circuit diagram: Chap. 7, Figs. 7-23 and 7-24.

Proceed as follows:-

(1) Select RECEIVER TEST and press the AF GEN and SCOPE keys. Set the AF generator to 1 kHz and connect the AF GEN OUTPUT socket to the AF INPUT socket. Press the REP SWEEP key.

Rows counters

(2) Check the operation of the rows counters and associated circuits as shown in Fig. 5-3.

Columns counters

(3) Check the operation of the columns counters and associated circuits as shown in Fig. 5-4.

Frame sync

(4) Connect the oscilloscope to TP2 FRAME SYNC. With SCOPE selected, check for a 450 μs positive pulse in a frame sync period of 18.95 ms.

(5) Press the BAR CHART key and check that the period increases by 32 μs.

(6) Check that IC29 pin 1 is held high. Press SCOPE and check that pin 1 is alternately high and low for successive frame sync periods.

Scope clock

(7) Check on the SCOPE CLK line at IC49 pin 3 for a 26 μs train of 10 MHz pulses in a period of 64 μs.

Scope trigger

(8) Connect the AF GEN OUTPUT socket to the AF INPUT socket and set the oscilloscope horizontal scale to 100 mV/div. With a 1 kHz input, check on the TRIGGER line at TP1 for 1 kHz TTL square waves.

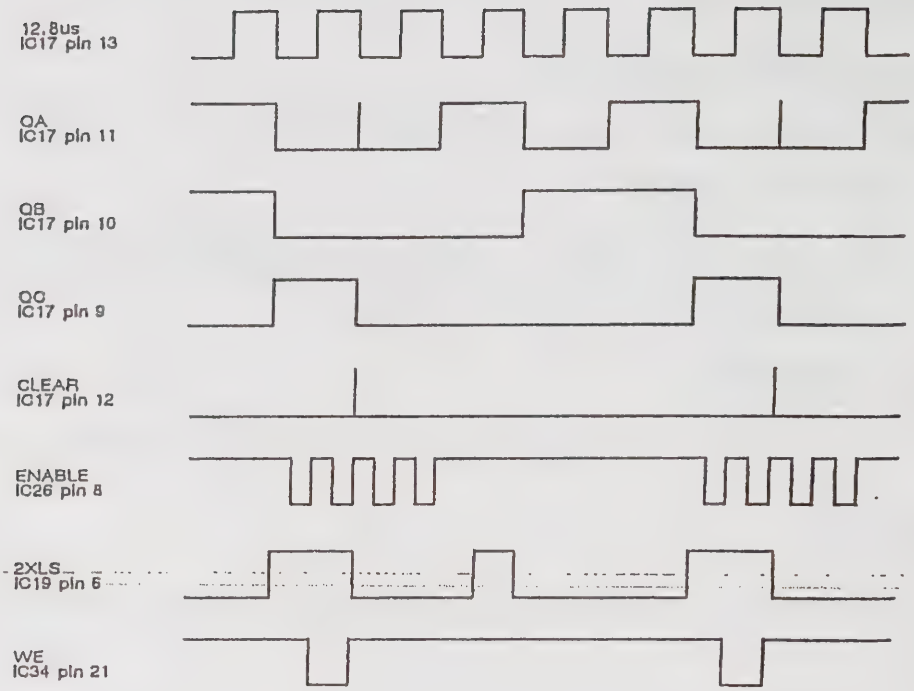


Fig. 5–3 Board AB3/2 rows counters timing

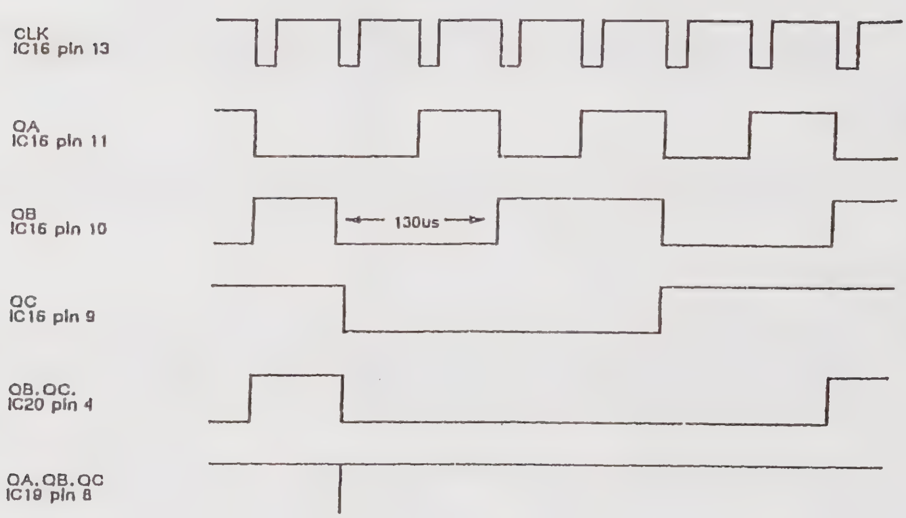


Fig. 5–4 Board AB3/2 columns counters timing

MICROPROCESSOR BOARD AB4/2

Test equipment: Oscilloscope, signal generator, frequency counter.

Circuit diagram: Chap. 7, Figs. 7-26, 7-27 and 7-28.

Proceed as follows:-

Operation of VARIABLE control

(1) Ensure that the TONES mode is not selected. Adjust the VARIABLE control while checking on TP6 and TP7 for square waves whose frequency increases as the rate of spin is increased. This checks board AZ1 operation.

(2) Check that IC1 pin 5 (SID) is high when the VARIABLE control is turned clockwise, and low when it is turned anti-clockwise. This checks IC29.

(3) Check that IC1 pin 4 (SOD) is high and that square waves are present on IC1 pin 6 when the VARIABLE control is turned.

(4) Press the TONES key then select CONTINUOUS from the RX SEQUENTIAL TONE menu. Check that IC1 pin 4 is low and that IC1 pin 6 does not respond to movement of the VARIABLE control.

Keyboard interrupt

(5) Select RECEIVER TEST. Check at TP8 for a low logic level. Press the front panel keys in turn and check each time that the level goes high, with the initial 40 ms consisting of negative-going 40 μs pulses.

(6) Transfer to IC1 pin 8. Press the front panel keys in turn and check for a high pulse that returns low when IC29 pin 13 goes low.

Checking A D converter

(7) Select RECEIVER TEST then press the AF GEN and SCOPE keys. Set the AF generator to 1 kHz and connect the AF GEN OUTPUT socket to the AF INPUT socket.

(8) Connect an oscilloscope to TP3 and check for a V REF of +5.0 V. This checks Zener diode D6.

(9) Check IC37 pin 11 for a 500 kHz squarewave. Transfer to IC3 pin 10 and check for a 250 kHz clock.

(10) Connect the oscilloscope to IC18 pin 4 and display the negative-going write and read pulses of 50 μs separation on channel one.

(11) Connect the oscilloscope channel two to OE IC3 pin 9. Check for a positive pulse coincident with the read (first) pulse on channel one.

(12) Transfer to ALE IC3 pin 22 and check for a positive pulse coincident with the write (second) pulse on channel one.

(13) Connect the oscilloscope to the VOLTMETER input at IC32 pin 4 and display the signal. Transfer to the RMS VOLTS input to IC3 pin 28 and check that the signal level is 0.707 of its former peak level. This checks the operation of RMS converter IC32.

(14) Connect the signal generator modulated by 5 kHz FM to the RF IN/OUT N socket. Select TRANSMITTER TEST and the RF IN/OUT N socket.

(15) Check for positive-going 'humps' on the PEAK line to IC3 pin 26 and the TROUGH line to IC3 pin 27. This checks the operation of peak/trough detector IC30.

(16) Check that when the horizontal POSITION control is adjusted, the voltage on the HORIZ SHIFT input to IC3 pin 1 alters accordingly.

Bistable IC19

(17) Press the front panel keys and check each time for a 13 µs negative-going pulse on the KEYBOARD LATCH RESET line to IC19 pin 15.

(18) Reselect SCOPE. Press the SINGLE SWEEP key and check for an 8 µs negative-going pulse on the SCOPE SINGLE SHOT/RESET line at IC19 pin 9. Press the REP key and check for a similar pulse on the SCOPE REPEAT line at IC19 pin 12.

(19) Connect the oscilloscope to IC19 pin 6. Switch off then back on while checking for a negative-going pulse (note that this may be difficult to detect) on pin 6.

(20) The remaining outputs are checked under the programmable divider heading.

RMS converter timer

(21) Check on the RMS TIME TRIGGER input at IC36 pin 3 for negative-going 0.6 µs pulses (the number and periods depending upon the mode selected). Transfer to IC36 pin 6 and check for the generation of 65 ms negative-going pulses.

Audio counter

(22) Select BAR CHART. With 1 kHz connected to the AF INPUT socket, check for a 1 kHz squarewave at IC24 pin 13.

(23) Decrease frequency and check that at about 800 Hz, IC21 pin 9 goes low and that f_{in} is present on IC22 pin 6. Check that IC21 pin 5 is high and that a 5 MHz squarewave is present on IC22 pin 8.

(24) Increase frequency until at about 1 kHz, IC21 pin 9 goes high. Check that $f_{in}/10$ is present on IC22 pin 6 and that IC21 pin 5 is still high.

(25) Decrease frequency until at about 250 Hz, IC21 pin 5 goes low and that a 500 kHz squarewave is present at IC22 pin 8.

Programmable divider

(26) Select TRANSMITTER TEST and connect a signal generator to the RF INPUT socket.

(27) Check at TP5 for a 100 µs period square wave.

(28) Transfer to the RF COUNTER GATE output at IC4 pin 2 and check for a positive
6 ms pulse followed by a low period.

(29) Set the signal generator in turn to 210 MHz and 10 MHz and check that the low period is respectively 400 ms and 100 ms (10 Hz resolution selected).

(30) Press HELP then CHANGE PARAMETERS and set the RF COUNTER RESOLUTION to 1 Hz. Check that the gating period has changed to 1 s. Disconnect the signal generator.

(31) Select RECEIVER TEST mode and press the AF GEN and SCOPE keys. Set the AF generator to 100 Hz and connect the AF GEN OUTPUT socket to the AF INPUT socket. Press the REP key.

(32) Check that IC19 pin 5 is held high.

(33) Repeatedly press the BAR/SCOPE key. Check for a 500 µs negative-going pulse each time that SCOPE is selected.

(34) Check for similar pulses whenever the HORIZ keys are pressed.

(35) Transfer to IC4 pin 29 and check for a burst of 1 µs positive pulses in a 2.5 µs period.

(36) Select the fastest timebase (100 µs) and check that the duration of the burst is 1.25 ms.

(37) Check that the duration of the burst increases linearly with timebase setting, e.g. with a 1 ms oscilloscope time base selected, the burst occupies 12.5 ms.

(38) Transfer to the SCOPE TIMEBASE output at IC4 pin 37. Select the fastest timebase (100 µs) and check that pin 37 is held low.

(39) Select a 1 ms timebase and check for a 2.5 µs negative-going pulse in a 25 µs period.

(40) Check that the period increases linearly with timebase setting, e.g. with a 10 ms oscilloscope timebase selected, a negative-going 2.5 µs pulse appears in a 250 µs period.

(41) Select RECEIVER TEST mode and press TONES. Select SEQUENTIAL and then select CCIR from the TONES STANDARD menu and enter a tone number.

(42) Select TONE BURST and check on IC4 pin 3 for a negative-going 0.1 ms pulse in a 100 ms period.

(43) Press RETURN and select the ZVEI tones standard. Select TONE BURST and check on IC4 pin 3 that the period has changed to 70 ms.

(44) Repeat the preceding step for EEA (or EIA) and check that the period has changed to 40 ms (or 33ms).

(45) Select SCOPE and check on the 2xLS input line at IC4 pin 30 for clock pulses of varying width occurring every 32 µs.

(46) Check on the FS input at IC4 pin 35 for a 450 µs pulse in a period of 18.95 µs.

(47) Transfer to the DELAY output at IC4 pin 38 and trigger from IC4 pin 35. Set the horizontal POSITION control fully anti-clockwise and check for a positive pulse occurring after a delay of 1.5 ms. Turn the POSITION control fully clockwise and check that the delay has increased to 3.5 ms.

Power down operation

(48) Check that TP4 is low. Check that TR4 is on (0 V at the collector).

(49) Repeatedly switch off to simulate LOW VOLTS, then back on. Check that immediately after switching off, TR4 switches off (+5.6 V on the collector) and that TR3 switches on.

Decoder IC8

(50) Select RECEIVER TEST. Repeatedly change the signal generator frequency using the VARIABLE control and check each time for negative-going double pulses on AB1/1 SKC 10b. Check that pulse duration is 0.6 µs and separation is 13 µs.

(51) Select TRANSMITTER TEST. Repeatedly change the AF generator frequency using the VARIABLE control and check each time for negative-going triple pulses on AB1/1 SKC 13a. Check that pulse duration is 0.6 µs and separations are 56 µs and 24 µs.

(52) Check for negative-going triple pulses on AB1/1 SKC 1b. Check that pulse duration is 0.6 µs and separations are 6.8 µs and 6.4 µs.

(53) Check for single 0 6 µs pulses on AB1/1 SKC 13b.

Notes...

(1) For maintenance purposes, the memory map is shown in Fig. 5-5 (seven pages).

(2) When replacing EPROMs, note that they are marked A and B and are inserted in the sockets for IC10 and IC9 respectively.

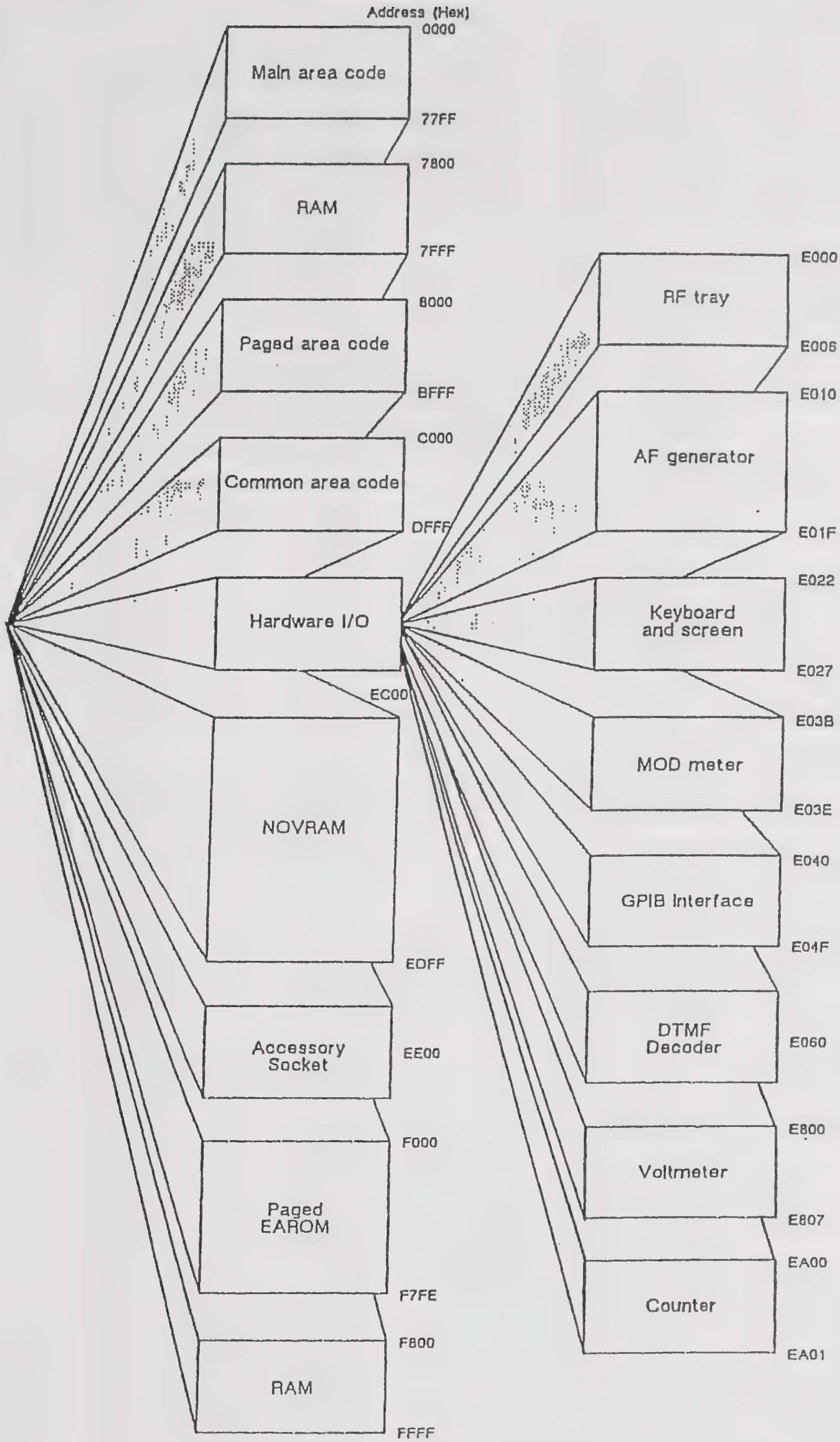


Fig. 5–5 Memory map

Memory map

Address (HEX)	Address (DEC)	Description
0000 - 77FF	00064 - 30719	Main area code
7800 - 7FFF	30720 - 32767	RAM
8000 - BFFF	32768 - 49151	Paged area code
C000 - DFFF	49152 - 57343	Common area code
E000 - EBFF	57344 - 60415	Hardware I/O
EC00 - EDFF	60416 - 60927	NOVRAM
EE00	60928	Accessory socket
F000 - F7FF	61440 - 63487	Paged EAROM
F800 - FFFF	63488 - 65535	RAM

Main area code

Address (HEX)	Address (DEC)	Description
0000	00000	Hardware RESET vector
0010	00016	Jump table error vector
0024	00036	VARIABLE interrupt vector
002C	00044	GPIB interrupt vector
0034	00052	Keyboard interrupt vector
0038	00056	Software RESET vector
003C	00060	Tones, DTMF and data interrupt vector
0040 - 77FF	00064 - 30719	Code

RAM

Address (HEX)	Address (DEC)	Description
7800 - 79FF	30720 - 31231	TMPSTR Temporary store for NOVRAM data
7A00 - 7FFF	31232 - 32767	Unused

Paged area code

Address (HEX)	Address (DEC)	Description
8000 - BEDF	32768 - 48863	Pages 0,1,2,3 or 4
BEE0 - BFFF	48864 - 49151	Jump table for calls to paged areas

Common area code

Address (HEX)	Address (DEC)	Description
C000 - C2FF	49152 - 49919	Jump table for calls to main area
C300 - C7FF	49920 - 51199	Text strings
C800 - CFFF	51200 - 53247	Numbers, terminators and messages
D000 - DFFF	53248 - 57343	Text strings

Hardware I/O

Address (HEX)	Address (DEC)	Description
E000 - E006	57344 - 57350	RF tray
E010 - E01F	57360 - 57375	AF generator
E022 - E027	57378 - 57383	Keyboard and screen
E03B - E03E	57403 - 57406	MOD meter
E040 - E04F	57408 - 57423	GPIB interface
E060	57440	DTMF decoder
E800 - E807	59392 - 59399	Voltmeter
EA00 - EA01	59904 - 59905	Counter

NOVRAM

Address (HEX)			Address (DEC)	Label	(Length)	Description
EC00	-	EC04	60416 - 60420	RFFREQ	(5)	RF GEN frequency
EC05	-	EC0B	60421 - 60427	RFLEVL	(7)	RF GEN level and increment
EC0C	-	EC0F	60428 - 60431	AFFRQ1	(4)	AF GEN1 frequency
EC10	-	EC13	60432 - 60435	AFFRQ2	(4)	AF GEN2 frequency
EC14	-	EC17	60436 - 60439	AFLEV1	(4)	AF1 level
EC18	-	EC1B	60440 - 60443	AFLEV2	(4)	AF2 level
EC1C	-	EC1F	60444 - 60447	MDLEV1	(4)	MOD1 level
EC20	-	EC23	60448 - 60451	MDLEV2	(4)	MOD2 level
EC24	-	EC27	60452 - 60455	LINC	(4)	Level increment
EC28	-	EC2C	60456 - 60460	FINC	(5)	Frequency increment
EC2D			60461	TRAMON		TX MON flag - 0 = normal, 1 = TX MON
EC2E			60462	IFFILT		TX MON IF filter - 0 = 12 kHz, 4 = 180 kHz
EC2F			60463	TXUNIT		TX MON STRENGTH units - 0 = μV, 1 = dBμV, 2 = dBm, 3 = dBR
EC30			60464	SCMODE		TX MON scan mode
EC31	-	EC32	60465 - 60466	TNESTD	(2)	Address of current tone standard
EC33			60467	LEVINC	(1)	Level increment type
EC34			60468	FRQINC	(1)	Frequency increment type
EC35			60469	SEL	(1)	RF input socket
EC36			60470	ACDC	(1)	AF input coupling
EC37			60471	BARSCP	(1)	Barchart/Scope
EC38			60472	DISTRT	(1)	Distortion type
EC39			60473	SCSSWP	(1)	Scope single sweep/repeat
EC3A			60474	SCTIM	(1)	Scope timebase pointer
EC3B			60475	SCVRAM	(1)	Scope AM vertical gain pointer
EC3C			60476	SCVRFM	(1)	Scope FM vertical gain pointer
EC3D			60477	SCVRPM	(1)	Scope PM vertical gain pointer
EC3E			60478	GENSEL	(1)	AF generator selection
EC3F			60479	GENST1	(1)	Generator type selection
EC40			60480	GENST2	(1)	Generator attribute selection
EC41			60481	AFON	(1)	AF generator on/off
EC42			60482	AFSTAT	(1)	AF generator status
EC43			60483	MODON	(1)	Modulation on/off
EC44			60484	CWON	(1)	RF generator on/off
EC45			60485	LVLLOK	(1)	AF or MOD levels locked
EC46			60486	MODE	(1)	Main instrument mode
EC47			60487	MODMDE	(1)	Receiver MOD type
EC48			60488	TXMODM	(1)	Transmitter MOD type
EC49			60489	NEWMOD	(1)	New MOD type
EC4A			60490	MDTUNE	(1)	MOD meter tuning auto/manual
EC4B			60491	FILTER	(1)	AF filter type
EC4C			60492	DBVFLG	(1)	AF level dBV flag
EC4D			60493	DBRFLG	(1)	MOD level dBR flag
EC4E			60494	BARHLD	(1)	Barchart auto-range/hold-range
EC4F			60495	BARNUM	(1)	Current barchart selected for update
EC50			60496	BARSEL	(1)	Current barchart selected by user
EC51			60497	TONEXT	(1)	Tone number for extended tone
EC52			60498	RFIMIJ	(1)	TX MONITOR RF image lower/upper
EC53			60499	BAND	(1)	TX MONITOR frequency band
EC54			60500	SMODE	(1)	Instrument sub-mode
EC55	-	ECB8	60501 - 60600	TNEDAT	(100)	Sequential tones send data buffer
ECB9	-	ECBC	60601 - 60604	MDFRQS	(4)	DCS MOD frequency (bit-rate)
ECBD	-	ECC0	60605 - 60608	MDLVLS	(4)	DCS MOD level
ECC1			60609	GENPOL	(1)	DCS generator polarity
ECC2			60610	DECPOL	(1)	DCS decoder polarity
ECC3	-	ECC4	60611 - 60612	SKOUNT	(2)	DCS decoder sample counter
ECC5			60613	INDCS	(1)	DCS showing/not-showing
ECC6	-	ECC9	60614 - 60617	AFLEVD	(4)	DTMF AF level
ECCA			60618	AFSTAD	(1)	DTMF AF generator status
ECCB	-	ECCE	60619 - 60622	MDLVLD	(4)	DTMF MOD level
ECCF			60623	MODMDD	(1)	DTMF MOD type
ECD0	-	ECEB	60624 - 60651	SDBUFF	(28)	DTMF send data buffer
ECEC			60652	STOTAL	(1)	DTMF send data buffer counter
ECED			60653	RTOTAL	(1)	DTMF receive data buffer counter
ECEE	-	ECF2	60654 - 60658	RFFRQP	(5)	POCSAG RF frequency
ECF3	-	ECF9	60659 - 60665	RFLVLP	(7)	POCSAG RF level
ECFA	-	ECFD	60666 - 60669	MDFRQP	(4)	POCSAG MOD frequency (bit-rate)
ECFE	-	ED01	60670 - 60673	MDLVLP	(4)	POCSAG MOD level (deviation)
ED02	-	ED05	60674 - 60677	POXRIC	(4)	POCSAG RIC in binary integer format
ED06	-	ED09	60678 - 60681	ERMASK	(4)	POCSAG error mask
ED0A			60682	ADRNUM	(1)	POCSAG address number
ED0B			60683	MESNUM	(1)	POCSAG message number
ED0C	-	ED0F	60684 - 60687	DCSWRD	(4)	DCS codeword
ED10	-	ED14	60688 - 60692	TXFREQ	(5)	TX MOD meter frequency

NOVRAM (contd.)

ED15	-	ED32	60693 - 60722	DTMBUF	(30)	DTMF receive data buffer
ED33	-	ED38	60723 - 60728	ERPDBM	(5)	dBm TX power
ED39			60729	SQULEV		TX MON squelch level
ED3A			60730	SQUFLG		TX MON squelch flag - 0 = mod off, 3=mod on
ED3B	-	ED3E	60731 - 60734	FRQFAC	(4)	TX MON strength frequency correction factor
ED3F	-	ED42	60735 - 60738	LEVSQU	(4)	TX MON ADC equivalent squelch level
ED43			60739	OLOOP		Outer loop counter for INCREM
ED44			60740	OLPMAX		Outer loop max count for INCREM
ED45			60741	ILOOP		Inner loop counter for INCREM
ED46			60742	ILPMAX		Inner loop max count for INCREM

EAROM Page 0

Address (HEX)			Address (DEC)	Label	(Length)	Description
F000	-	F5AF	61440 - 62895	NVSTR	(1456)	26 non-volatile stores, each of 56 bytes
F5B0	-	F64B	62896 - 63051			Unused
F64C	-	F64F	63052 - 63055	TXDIFF	(4)	TX MONITOR iteration difference
F650			63056	TXITER	(1)	Number of iterations for last TX MONITOR cal
F651			63057	OPTION	(1)	TX MONITOR available flag
F652	-	F653	63058 - 63059	TX100K	(2)	9 TX MONITOR strength calibration factors for frequency
F654	-	F655	63060 - 63061	TX300K	(2)	
F656	-	F657	63062 - 63063	TX1M	(2)	
F658	-	F659	63064 - 63065	TX3M	(2)	
F65A	-	F65B	63066 - 63067	TX10M	(2)	
F65C	-	F65D	63068 - 63069	TX30M	(2)	
F65E	-	F65F	63070 - 63071	TX100M	(2)	
F660	-	F661	63072 - 63073	TX300M	(2)	
F662	-	F663	63074 - 63075	TX1G	(2)	
F664	-	F667	63076 - 63079	FAC1	(4)	7 TX MONITOR strength calibration factors for level
F668	-	F66B	63080 - 63083	FAC2	(4)	
F66C	-	F66F	63084 - 63087	FAC3	(4)	
F670	-	F673	63088 - 63091	FAC4	(4)	
F674	-	F677	63092 - 63095	FAC5	(4)	
F678	-	F67B	63096 - 63099	FAC6	(4)	
F67C	-	F67F	63100 - 63103	FAC7	(4)	
F680			63104	TMPFAC	(1)	TX MONITOR calibration temperature
F681	-	F684	63105 - 63108	CWFAC	(4)	3 DIRECTIONAL POWER METER calibration factors
F685	-	F688	63109 - 63112	PEPFAC	(4)	
F689	-	F68C	63113 - 63116	PEPSQR	(4)	
F68D			63117			Unused
F68E	-	F691	63118 - 63121	DEFMDL	(4)	Default MOD level
F692			63122	DEFMTP	(1)	Default MOD type
F693	-	F696	63123 - 63126	RFLVOF	(4)	RF level offset
F697	-	F69B	63127 - 63131	TNEEXT	(5)	Extended tone length
F69C	-	F6B7	63132 - 63159	RFCOR3	(28)	Low frequency band RF POWER correction
F6B8			63160	PDEM	(1)	Power reading PD/EMF
F6B9			63161	RFRES	(1)	RF counter resolution
F6BA			63162	SNADEF	(1)	Default reading
F6BB			63163	NALLOW	(1)	STORE function enable/disable
F6BC	-	F6BE	63164 - 63166	FCOD	(3)	SELF TEST fail codes
F6BF	-	F6D4	63167 - 63188	RFCOR2	(22)	6dB DUPLEX RF POWER correction
F6D5			63189			Unused
F6D6	-	F6D7	63190 - 63191	DTMFTN	(2)	Duration of DTMF tone
F6D8	-	F6D9	63192 - 63193	DTMFGP	(2)	Duration of DTMF gap
F6DA	-		63194	DEFFIL	(1)	Default AF filter
F6DB			63195	POMODE	(1)	GPIB MODE normal/2955 emulation
F6DC	-	F6DE	63196 - 63198			Unused
F6DF			63199	UKUSFL	(1)	Tone standard UK/USA
F6E0	-	F6FF	63200 - 63231	TONSTD	(32)	User-defined tones
F700	-	F70B	63232 - 63243	BULKY	(12)	Bulk attenuator correction
F70C	-	F716	63244 - 63254	LAWCOR	(11)	RF level fine correction
F717	-	F722	63255 - 63266	AMLAW	(12)	AM correction to RF level
F723	-	F749	63267 - 63305	OS1LAW	(39)	FM correction to VCO1 frequency
F74A	-	F779	63306 - 63353	OS2LAW	(48)	FM correction to VCO2 frequency
F77A	-	F7A6	63354 - 63398	OS3LAW	(45)	FM correction to VCO3 frequency

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F7A7	63399	TRMLOK	(1)	TX/RX MOD meter frequency lock
F7A8	63400	AF20DB	(1)	AF 20dB attenuator flag
F7A9	63401	OHM600	(1)	600Ω adaptor flag
F7AA - F7FE	63402 - 63486	RFCOR	(85)	High frequency band RF POWER correction

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Address (HEX)	Address (DEC)	Label	(Length)	Description
F000 - F207	61440 - 61959	TITLE	(520)	26 store titles, each of 20 bytes
F208	61960	CHFLG1		TX MON channel scan flag 0 = display freq, 1 = display chan
F209 - F20D	61961 - 61965	STFRQ1	(5)	TX MON scan 1 - start freq
F20E - F20F	61966 - 61967	STCHN1	(2)	TX MON scan 1 - start chan
F210 - F214	61968 - 61972	SCINC1	(5)	TX MON scan 1 - scan increment
F215	61973	INCSGN		TX MON scan 1 - increment direction 0 = positive, 255 = negative
F216 - F217	61974 - 61975	STPNM1	(2)	TX MON scan 1 - no.of steps
F218	61976	CHFLG2		TX MON channel scan 2 flag 0 = display freq, 1 = display freq
F219	61977	SCNUM2		TX MON scan 2 - no. of freqs set up
F21A - F271	61978 - 62065	SCBUF2	(88)	TX MON scan 2 - 11 freqs/channels

RAM

Address (HEX)	Address (DEC)	Description
F800 - F83F	63488 - 63551	TX TEST mode store
F840 - F87F	63552 - 63615	RX TEST mode store
F880 - F8BF	63616 - 63679	AF TEST mode store
F8C0 - F8FF	63680 - 63743	DX TEST mode store
F900 - FBFF	63744 - 64511	Common area variables
FC00 - FCFF	64512 - 64767	Main area variables
FD00 - FD7F	64768 - 64895	Keyboard buffer
FD80 - FDFF	64896 - 65023	GPIB input buffer
FE00 - FE7F	65024 - 65151	GPIB output buffer
FE80 - FF3F	65152 - 65343	Paged area variables
FF40 - FF7F	65344 - 65407	TX MONITOR mode store
FF80 - FFFF	65408 - 65535	Stack

RF tray

Address (HEX)	Address (DEC)	Label	Description
E000	57344	AA30	RF generator frequency
E001	57345	AA31	MOD meter RF path
E002	57346	RECVER	Sensitive receiver RF path
E004	57348	AA14	MA844 address register
E005	57349	AA15	MA844 data register
E006	57350	AA16	MA844 control register

AF generator

Address (HEX)	Address (DEC)	Label	Description
E010	57360	AFGEN1	AF GEN1 frequency
E011	57361	AFGEN2	AF GEN2 frequency
E012	57362	AFLTCH	AF GEN address latch and wave shape
E013	57363	AMLEVH	AM modulation level bits 4-11
E014	57364	AMLEVL	AM modulation level bits 0-3
E015	57365	AFDPL	AF and DCS control switching
E016	57366	MODCON	Modulation control switching
E017	57367	IPATEN	RF input and attenuator relay control
E018	57368	MDDAC1	MOD1 level DAC
E019	57369	MDDAC2	MOD2 level DAC
E01A	57370	LTAMFM	Modulation level correction DAC
E01B	57371	LVAMFM	DCS correction DAC
E01C	57372	AFDAC1	AF1 level DAC (lower 8 bits)
E01D	57373	AFDAC2	(upper 4 bits)
E01E	57374	AFDAC3	AF2 level DAC (lower 8 bits)
E01F	57375	AFDAC4	(upper 4 bits)

Keyboard and screen

Address (HEX)	Address (DEC)	Label	Description
E022	57378	ROWS	Keyboard rows read
E023	57379	COLS,SETKEY	Keyboard columns write
E024	57380	LEDL	Front panel LEDs
E025	57381	CHAR	Screen data
E026	57382	ADDRLO	Screen column address
E027	57383	ADDRHI	Screen row address

Modulation meter

Address (HEX)	Address (DEC)	Label	Description
E03B	57403	IC35EN	Demod and AF path
E03D	57405	IC34EN	Demod and AF path
E03E	57406	IC33EN	Demod and AF path

GPIB interface

Address (HEX)	Address (DEC)	Label	Description
E040 - E047	57408 - 57415	ADDRSW	Address switch
E048	57416	DATAIO	Data I/O register
E049	57417	INTST1	Interupt status byte 1
E04A	57418	INTST2	Interupt status byte 2
E04B	57419	SPOLDT	Serial poll register
E04C	57420	ADDRMD	Address mode register
E04D	57421	AUXIMD	Auxiliary mode register
E04E	57422	ADDREG	Address register
E04F	57423	EOSREG	End Of String register

DTMF decoder

Address (HEX)	Address (DEC)	Label	Description
E060	57440	DTMFCS	DTMF decoder register

Voltmeter

Address (HEX)	Address (DEC)	Label	Description
E800	59392	ADE800	+v peak detector
E801	59393	ADE801	-v peak detector
E802	59394	ADE802	RMS detector
E803	59395	ADE803	Scope horizontal shift
E804	59396	ADE804	DCS decoder input
E805	59397	ADE805	FM indicator
E806	59398	ADE806	Sensitive receiver signal strength
E807	59399	ADE807	Sensitive receiver temperature

Counter

Address (HEX)	Address (DEC)	Label	Description
EA00	59904	AB1200	Divider data register
EA01	59905	AB1201	Divider command register

DEMODULATION AND SCOPE BOARD AB5/2

Test equipment : Oscilloscope, signal generator, AF generator.

Circuit diagram: Chap. 7, Figs. 7–30, 7–31 and 7–32.

Proceed as follows:–

Preliminary

(1) Set the signal generator to carrier frequency 100 MHz, FM deviation 25.5 kHz, modulation rate 1 kHz, RF level 0 dBm.

(2) Select TRANSMITTER TEST, modulation FM and RF IN/OUT BNC socket. Select manual tune (to prevent tracking the signal generator).

85 kHz HP filter

(3) Switch the signal generator modulation off. Check at IC100 pin 6 for a 110 kHz sine wave.

(4) Tune the signal generator higher in frequency and check that after plus 30 kHz roll–off occurs. Retune the signal generator to 100 MHz.

Limiter

(5) Connect the oscilloscope to IC102 pin 7 and check for 110 kHz at TTL levels. This checks the limiting operation.

(6) Set the modulation to AM and check that IC102 pin 7 goes high. This checks the operation of switch TR100.

Discriminator

(7) Reset the modulation to FM. Check IC103 pin 6 for 3.4 µs pulses.

(8) Vary the signal generator carrier frequency in 10 kHz steps around 100 MHz and check that the mark/space ratio changes accordingly.

15 kHz LP filter

(9) Connect the oscilloscope to TP2. Switch the signal generator modulation on and adjust the frequency while checking for roll–off after 10 kHz. Check that at 15 kHz the level has decreased by half (i.e. 6 dB down).

Amplifier IC104b

(10) Set the signal generator modulating frequency to 1 kHz. Check at TP2 for a 1 kHz sinewave at 10 V pk–pk ±20%. If not, the FM and ΦM level may hve to be adjusted. See Table 3–1.

De–emphasis

(11) Set the signal generator modulation to 5 kHz deviation. Connect the oscilloscope to IC105 pin 6 and check for 4 V pk–pk at a 1 kHz rate, for 2 V pk–pk at a 2 kHz rate, and 8 V pk–pk at a 500 Hz rate.

Checking 40 dB attenuator

(12) Connect the oscilloscope, AC coupled, to the junction of C124/R141/R142 and check that the 110 kHz signal level is $\frac{1}{100}$ of that on the IF IN line at contact 2a.

Amplifier TR102

(13) Check that the 110 kHz signal at the junction of C127/C128/C129/R149 is 50 times greater than that at the junction of C126/R146/R147.

AGC

(14) With the signal generator modulation off, check TP1 for a 110 kHz sinewave at 1 V pk–pk. If not, the AM monitor has to be adjusted before proceeding. See Table 3–1.

Band–pass filter

(15) With the signal generator modulation off, turn down the RF level until the AGC has no effect. Adjust the signal generator carrier frequency upwards from 100 MHz and check that roll–off occurs at plus 50 kHz. Tune downwards from 100 MHz and check that roll–off occurs at minus 80 kHz.

AM output

(16) Set the signal generator to 64% AM. Connect to TP3 and check for 5 V pk–pk ±20%. If not, the AM monitor has to be adjusted before proceeding. See Table 3–1.

Switching

(17) Check the switching operation for the whole board by using the information given in Tables 5–1a to 5–1e.

Amplifier chain

(18) The amplifier chain can be checked by connecting a signal source to the AF INPUT socket with RECEIVER TEST mode selected, then checking the levels by reference to Tables 5–2 and 5–3. To check the oscilloscope path, select SCOPE and refer to Table 5–2. To check the voltmeter path, select BAR CHART and refer to Table 5–3. For the lower voltage levels, use an AF generator set to 1 kHz. For the higher voltage levels, it may be necessary to use a DC source (but remember to convert the input values from pk–pk to RMS).

(19) If the levels are incorrect, it is necessary to adjust the voltmeter and scope ranging before proceeding. See Table 3–1.

Vertical shift

(20) Vary the oscilloscope vertical shift control and check that the DC level at the junction of R221/C204/R222 varies commensurately.

TABLE 5–1a BOARD AB5/2 SWITCHING OPERATION

Operation	To implement	Decoder IC309 pins 4	5	6	7	Latch IC306 pins 9	6	IC311 pin 7	Switches closed
Select AM	Press TX TEST, AM	L	H	H	–	–	–	H	IC316 14,15 : IC317 2,3
Select ΦM	Press TX TEST, ΦM	H	L	H	–	–	–	H	IC317 6,7
Select FM	Press TX TEST, FM	H	H	L	–	–	–	H	IC317 10,11
Select 15 kHz LP filter	Press TX TEST, LOW PASS (15 kHz)	–	–	–	–	H	L	H	IC318 7,9 : IC318 12,10
Select 0.3 – 3.4 kHz BP filter	Press TX TEST, BAND PASS	–	–	–	–	H	H	H	IC318 8,9 : IC318 11,10
Select 300 Hz LP filter	Press TX TEST, LOW PASS (300 Hz)	–	–	–	–	L	H	H	IC318 6,9 : IC318 13,10
Select external filter	Press TX TEST, EXTernal	–	–	–	–	L	L		IC318 5,9 : IC318 14,10
RF power warning	Connect 2 W max. to BNC socket	H	H	H	–			L*	IC317 14,15 (after delay)

* Switching

TABLE 5-1b BOARD AB5/2 SWITCHING OPERATION

Operation	To implement	Decoder IC309 pins 4	5	6	7	12	11	10	9	Switches closed
Select AF input socket	Press RX TEST	L	H	H	–	–	–	–	–	IC319 2,3
Select reverse power	Connect ACCESSORY socket pin 6 to 0 V	H	L*	H	–	–	–	–	–	IC319 6,7
Select forward power	Connect ACCESSORY socket pin 6 to 0 V	H	H	L*	–	–	–	–	–	IC319 10, 11
RF power ranging x1	Press TX TEST	–	–	–	–	L	H	H	–	IC322 1,4
RF power ranging x2	Vary input to BNC socket by ±10 dBm	–	–	–	–	H	L	H	–	IC322 8,5
RF power ranging x5		–	–	–	–	H	H	L	–	IC322 9,12

*Switching

TABLE 5-1c BOARD AB5/2 SWITCHING OPERATION

Operation	To implement	Decoder IC309 pins 4	5	6	7	12	11	10	9	Switches closed
SINAD filter out	Press RX TEST. DIST'N off	L	H	H	–	–	–	–	–	IC313 2,3
SINAD filter in	Press RX TEST, DIST'N on	H	L*	H	–	–	–	–	–	IC313 6,7
RF power (absorptive)	Press TX TEST	H	H	L*	–	–	–	–	–	IC313 10,11
Voltmeter/demod. ranging x1		–	–	–	–	L	H	H	H	IC314 2,3
Voltmeter/demod. ranging x2	Press TX TEST, DIST'N off, FM Vary deviation from 1 kHz to 15 kHz	–	–	–	–	H	L	H	H	IC314 6,7
Voltmeter/demod. ranging x5		–	–	–	–	H	H	L	H	IC314 10,11
Voltmeter/demod. ranging x10		–	–	–	–	H	H	H	L	IC314 14,15

* Switching

TABLE 5-1d BOARD AB5/2 SWITCHING OPERATION

Operation	To implement	Decoder IC309 pins 4	5	6	7	12	11	10	9	Switches closed
Scope ranging x1	Press TX TEST, SCOPE. Select 30 kHz FM	L	H	H	H	–	–	–	–	IC315 2,3
Scope ranging x2	Press TX TEST, SCOPE. Select 15 kHz FM	H	L	H	H	–	–	–	–	IC315 6,7
Scope ranging x5	Press TX TEST, SCOPE. Select 6 kHz FM	H	H	L	H	–	–	–	–	IC315 10,11
Scope ranging x10	Press TX TEST, SCOPE. Select 3 kHz FM	H	H	H	L	–	–	–	–	IC315 14,15
AF to scope	Press RX TEST.	–	–	–	–	–	L	H	–	IC316 6,7
Demod. to scope	Press TX TEST.	–	–	–	–	–	H	L	–	IC316 10,11

TABLE 5-1e BOARD AB5/2 SWITCHING OPERATION

Operation	To implement	Decoder IC309 pins 4	5	6	7	12	11	10	9	Switches closed
Peak detector in	Press TX TEST	L*	–	–	–	–	–	–	–	IC313 14,15 closed
AF/scope ÷20	Press RX TEST, SCOPE, 20 V/div.	–	L	–	–	–	–	–	–	IC319 14,15 closed
AF/scope ÷2	Press RX TEST, SCOPE, 500 mV/div.	–	H	–	–	–	–	–	–	IC319 14,15 open
Select DC	Press RX TEST, DIST'N off, DC	–	–	L	–	–	–	–	–	RLA closed
Scope ranging x1	Press RX TEST, SCOPE, 20 V/div.	–	–	–	L	–	–	–	–	IC316 2,3 closed
Scope ranging x10	Press RX TEST, SCOPE, 5 V/div.	–	–	–	H	–	–	–	–	IC316, 2,3 open
AF/FWD/REV to filters	Press RX TEST	–	–	–	–	L	–	–	–	IC312 2,3 closed
Demod. to filters (POCSAG and DCS)	Press TX TEST	–	–	–	–	–	L	–	–	IC312 6,7 closed
External AF to scope x1	Press RX TEST, SCOPE, 20 V/div.	–	–	–	–	–	–	L	–	IC312 10,11 closed
External AF to scope x10	Press RX TEST, SCOPE, 50 mV/div.	–	–	–	–	–	–	H	–	IC312 10,11 open
AF/FWD/REV to volt-meter x1	Press BAR, DIST'N off, DC. 7 V DC to AF INPUT	–	–	–	–	–	–	–	L	IC31214,15 closed
AF/FWD/REV to volt-meter x10	Press BAR, DIST'N off, DC. 3 V DC to AF INPUT	–	–	–	–	–	–	–	H	IC312 14,15 open

*Switching

TABLE 5-2 BOARD AB5/2 OSCILLOSCOPE SIGNAL LEVELS

AF in (pk-pk)	/div	IC304 pin 5	IC200 gain	Level	IC304 pin 16	IC201 gain	Level	IC304 pin 8	IC204a gain	Level	IC305 pins 15	IC305 pins 12	IC20 gain	Scope
–	100V	L	÷20	–	L	x1	–	L	x1	–	L	L	x1	–
–	50V	L	÷20	–	L	x1	–	L	x1	–	L	H	x2	–
80V	20V	L	÷20	4V	L	x1	4 V	L	x1	4V x k	H	L	x5	20V x k
40V	10V	L	÷20	2V	L	x1	2 V	L	x1	2V x k	H	H	x10	20V x k
20V	5V	L	÷20	1V	L	x1	1 V	H	x10	10V x k	L	H	x2	20V x k
8V	2V	L	÷20	400mV	L	x1	400mV	H	x10	4V x k	H	L	x5	20V x k
4V	1V	L	÷20	200mV	L	x1	200mV	H	x10	2V x k	H	H	x10	20V x k
2V	500mV	H	÷2	1V	L	x1	1V	H	x10	10V x k	L	H	x2	20V x k
800mV	200mV	H	÷2	400mV	L	x1	400mV	H	x10	4V x k	H	L	x5	20V x k
400mV	100mV	H	÷2	200mV	L	x1	200mV	H	x10	2V x k	H	H	x10	20V x k
200mV	50mV	H	÷2	100mV	H	x10	1V	H	x10	10V x k	L	H	x2	20V x k
80mV	20mV	H	÷2	40mV	H	x10	400mV	H	x10	4V x k	H	L	x5	20V x k
40mV	10mV	H	÷2	20mV	H	x10	200mV	H	x10	.2V x k	H	H	x10	20V x k

Where k is the ratio of IC203a OUT/IN (approx. 0.17)

TABLE 5-3 BOARD AB5/2 VOLTMETER SIGNAL LEVELS

AF in (RMS)	Range	Reso-lution	IC304 pin 5	IC201 gain	Level	IC304 pin 19	IC202 gain	Level	IC305 pins 9	IC305 pins 6	IC204b gain	Volt-meter
100V	64 –128V	500mV	L	÷20	5V	L	x1	5V	L	L	x1	5V x k
50V	25.6 – 64V	250mV	L	÷20	2.5V	L	x1	2.5V	L	H	x2	5V x k
20V	12.8 – 25.6V	100mV	L	÷20	1V	L	x1	1V	H	L	x5	5V x k
10V	6.4 – 12.8V	50mV	L	÷20	500mV	L	x1	500mV	H	H	x10	5V x k
5V	2.56– 6.4V	25mV	L	÷20	250mV	H	x10	2.5V	L	H	x2	5V x k
2V	1.28– 2.56V	10mV	L	÷20	100mV	H	x10	1V	H	L	x5	5V x k
1V	0.64– 1.28V	5mV	L	÷20	50mV	H	x10	500mV	H	H	x10	5V x k
500mV	256–640mV	2.5mV	H	÷2	250mV	H	x10	2.5V	L	H	x2	5V x k
200mV	128–256mV	1mV	H	÷2	100mV	H	x10	1V	H	L	x5	5V x k
100mV	–128mV	0.5mV	H	÷2	50mV	H	x10	500mV	H	H	x10	5V x k

Where k is the ratio of IC203b OUT/IN (approx. 1.0)

50 kHz LP filter

(21) Select RECEIVER TEST and connect the AF generator set to 10 kHz to the AF INPUT socket. Connect the oscilloscope to the SCOPE line at contact 32b.

(22) Check that the response is flat to 20 kHz and that obvious roll-off occurs at 50 kHz.

0.3 to 3.4 kHz BP filter

(23) Select BAND PASS and connect the oscilloscope to the rear panel DE-MOD OUT socket.

(24) Adjust the AF generator frequency upwards from 1 kHz and check that the signal is 3 dB down at 3.4 kHz. Tune downwards and check that the signal is 3 dB down at 300 Hz.

(25) Switch between the band-pass and 50 kHz low-pass filters. If the signal levels are different, then the band-pass filter has to be adjusted before proceeding. See Table 3-1.

300 Hz LP filter

(26) Press LOW-PASS to obtain the 300 Hz LP filter.

(27) Adjust the AF generator upwards from 100 Hz and check that the signal is 3 dB down at 300 Hz.

SINAD filter

(28) Select DIST'N on. Set the AF generator output to 1 kHz at 100 mV. Check at 1 kHz minus 8 Hz and 1 kHz plus 8 Hz that the level at IC301 pin 14 is less than $\frac{1}{10}$ of the level at IC204 pin 7. If not, the notch width has to be adjusted. See Table 3-1.

AF SYNTHESIZER BOARD AB6/1

Test equipment : Oscilloscope, frequency counter.

Circuit diagram: Chap. 7, Figs. 7–34 and 7–35.

Proceed as follows:–

Audio generators

(1) Set frequency to 1 kHz, sinewave. Monitor TP2 with an oscilloscope. A 1 kHz sine wave of 6 V pk–pk (approx.) should be present. Change frequency to 20 kHz. The step approximations should be clearly visible, with no steps missing. TP3 should be a smoothed version of the same signal.

(2) Repeat (1) for AF GEN 2, but at TP4 and 5.

(3) LP filter check. Set both generators to 20 kHz, square wave. Compare the signals at TP3 and TP5. TP3 should be a 5 V pk–pk square wave and TP5 should be a filtered equivalent.

Gain setting

(4) Set AF GEN 1 to 1 kHz, 100 mV, sine wave. TP6 should be a 1.5 V pk–pk sine wave. AF GEN out should be 100 mV RMS (280 mV pk–pk). Change AF GEN 1 level to 1 V and check AF GEN out is 1 V RMS (2.8 V pk–pk).

(5) Turn AF GEN 1 off and AF GEN 2 on and repeat (4), but with TP7.

Modulation level setting

(6) In RECEIVER TEST test mode, set RF GEN frequency 150 MHz, mod level 25 kHz. Monitor TP12. Note the voltage (approximately 6 V pk–pk). Change the RF GEN frequency to 300 MHz. The voltage should halve. Change the RF GEN frequency to 600 MHz, the voltage should halve again.

(7) Turn MOD 1 off, MOD 2 on, and repeat (6).

Phase modulation

(8) Monitor TP13. Set mod frequency 1 kHz level 25 kHz. Change modulation frequency to 2 kHz, the signal amplitude should not change. Change modulation level to 5 rad, the signal amplitude should fall by 50%.

FM tracking correction

(9) Set modulation frequency 1 kHz, level 25 kHz. Monitor TP15. Changing the RF GEN frequency from 90 to 150 MHz should vary the mod amplitude by 10–30%.

AM/FM setting

(10) Monitor TP16. Check that with FM selected, the signal is a constant voltage that should vary with adjustment of R20. Check that with AM selected the mod appears at TP16, and that IC28(b) is open.

POCSAG generator

(11) Enter the POCSAG display. Monitor TP15. Pressing the SEND key should produce a burst of data (approximately 1.6 V pk–pk) centred about zero.

INPUT SWITCHING ASSEMBLY AC0/2

Test equipment: Oscilloscope, power source.

Circuit diagram: Chap.7, Fig. 7-36.

Proceed as follows:-

Overheat

(1) Select TRANSMITTER TEST and the RF IN/OUT N socket. Connect the oscilloscope to OVER TEMP OUT AC0/2 tag 1.

(2) With no RF input, i.e. at ambient temperature, check that the voltage on AC0/2 tag 1 is between 4 and 5 V.

(3) Connect the power source set to 30 W to the RF IN/OUT N socket. Check that the voltage on AC0/2 tag 1 falls to no lower than 2.5 V.

(4) Connect a 12 kΩ resistor between AC0/2 tag 1 and earth and check that the screen flashes, followed after a delay by the audible warning.

Overload detection and isolation

(5) Select the RF IN/OUT BNC socket and connect the power source set to a low level to the socket.

(6) Check for a high logic level on DUPLEX-ISOLATE A0 tag 2.

(7) Increase the input voltage negatively, and check that when A0 tag 4 is at +1 V, the screen flashes followed after a delay by an audible warning. Check that A0 tag 2 goes to a low logic level to operate the relay to disconnect the input.

(8) Increase the input voltage positively, and check that when A0 tag 5 is at -1 V, the screen flashes and the warning sounds as before.

Input selection

(9) With TRANSMITTER TEST selected, check that INPUT SELECT on A0 tag 3 is at a high logic level.

(10) Select two-port DUPLEX test and check that A0 tag 3 has gone low.

Duplex/normal

(11) With two-port DUPLEX test selected, check that DUPLEX/NORMAL on A0 tag 6 is at a low logic level.

(12) Select one-port DUPLEX test and check that A0 tag 6 has gone high.

CRT DRIVE BOARD AC1

Test equipment: Oscilloscope, signal generator.

Circuit diagram: Chap. 7, Fig. 7-37.

Proceed as follows:-

Internal standard

(1) The frequency of the internal 10 MHz crystal oscillator can be checked and, if necessary, adjusted using the procedure given under '10 MHz standard' in Chap. 3.

Divider operation

(2) Check at IC5 pin 4 for 10 MHz at TTL levels. Transfer to IC5 pin 3 and check for 1 MHz, then to pin 13 and check for 100 kHz.

External input

(3) Connect a 1 MHz signal in the range 100 mV to 3 V RMS to the rear panel EXT STD 1 MHz socket.

(4) Check at IC4 pin 1 for 1 MHz at TTL levels. This checks TR5 and TR6.

(5) Check at IC4 pin 12 for 100 kHz. This checks the divider operation.

Phase detector operation

(6) Vary the frequency of the external signal and check for a varying mark/space ratio at IC3 pin 3.

(7) Transfer to the junction of R43/C34/R42 and check for a varying DC voltage as the frequency of the external signal is varied.

Video amplifier

(8) Check tag 9 for a 38 V pk-pk signal. Check that the lower level (beam cut-off) is at +5 V. This checks the operation of TR1,TR2.

Frame output

(9) Check on IC1 pin 9 for a ramp at a rate of 52.7 Hz.

(10) Check that the display has full horizontal cover of the tube face. If not, adjustment is necessary. See Table 3-2.

(11) Check that the characters on the display are linear across the tube face. If not, adjustment is necessary. See Table 3-2.

(12) Check IC1 pin 10 for a DC bias of 2.3 V.

(13) Check at IC1 pin 4 for a waveform of 25 V amplitude at the frame rate.

Line output

(14) Check that the display is centrally positioned on the tube. If not, adjustment is necessary. See under 'Vertical shift' in Table 3-2.

(15) Check that TR4 and TR3 switch on and off (but note the 300 V on TR3 collector) at the line sync rate.

(16) Check that the display has full vertical cover of the tube face. If not, adjustment is necessary. See under 'Linearity and width' in Table 3-2.

Supplementary supplies

(17) Check for +475 V at the junction of D9/C26.

(18) Check for +50 V at TR2 collector (can).

(19) Check for +150 V at PLB 1.

(20) Check tag 8 for +22 V.

INTENSITY control

(21) Check at tag 14 that the voltage varies between 125 and 80 V (nominal) as the front panel INTENSITY control is varied across its range. Check for a full range of intensities (note that the lower voltage provides the high intensity).

(22) Check that the display is in sharp focus. If not, adjustment is necessary. See under 'Focus' in Table 3-2.

MAIN KEYBOARD AF1/2

Test equipment: Oscilloscope.

Circuit diagram: Chap. 7, Fig. 7–41.

Proceed as follows:–

Key operation

(1) Check that the COLUMNS lines leading to PLA7, 11, 16, 19, 18, 13, 14, 15 are all high.

(2) Check that the ROWS lines leading to PLA12, 20, 17, 9, 6, 10, 2, 3, 4 are all low.

(3) Press and hold the keys in turn while checking for corresponding low logic levels on the COLUMNS lines (refer to the circuit diagram to correlate keys with lines). For example, pressing and holding the RX TEST key causes PLA 11 to go low.

Latch operation

(4) Press SELECT until IC1 pin 5 goes high. Check that RF IN/OUT BNC socket LED D1 is lit.

(5) Press SELECT once. Check that IC1 pin 7 goes high and that RF IN/OUT N socket LED D2 is lit.

(6) Select RECEIVER TEST and set a modulating frequency.

(7) Set an AM depth level. Check that IC1 pin 12 goes high and that LED D4 is lit.

(8) Set an FM deviation level. Check that IC1 pin 15 goes high and that LED D5 is lit.

(9) Set a ΦM deviation level. Check that IC1 pin 10 is goes and that LED D3 is lit.

SCOPE KEYBOARD AF2/2

Test equipment: Oscilloscope.

Circuit diagram: Chap.7, Fig. 7–42.

Proceed as follows:–

Key operation

(1) Check that the COLUMNS lines leading to tags 4, 6 and 8 are all high.

(2) Check that the ROWS lines leading to tags 7 and 9 are both low.

(3) Press and hold the keys in turn while checking for corresponding low logic levels on the COLUMNS lines (refer to the circuit diagram to correlate keys with lines). For example, pressing and holding the RX TEST key causes tag 4 to go low.

Analogue controls

(4) Connect the oscilloscope in turn to the wipers of the VOLUME and POSITION controls R2, R3 and R4 and check for 0 to +5 V as the controls are adjusted over their full ranges.

GPIB INTERFACE UNIT AD1

Test equipment: Oscilloscope.

Circuit diagram: Chap. 7, Fig. 7–40.

Proceed as follows:–

Power supply

(1) Check AB1/1 PLC contact 20 for +5 V.

Clock signal

(2) Check AB1/1 PLC contact 19 for a 5 MHz square wave at TTL levels.

POWER SUPPLY BOARD AR1/1

Test equipment: Oscilloscope.

Circuit diagram: Chap. 7, Fig. 7-44.

Proceed as follows:-

Input relay

(1) Connect a DC supply of 12 to 15 V at 6 to 5 A to the rear panel DC SUPPLY socket. Check that TR18 is switched on (0 V at collector) and that RLA contacts 5 and 6 are connected. (Check at this time, that the fan is operating.)

(2) Connect AC mains to the rear panel AC SUPPLY socket. Check that TR19 switches on, TR18 switches off and RLA contacts 7 and 6 are connected.

(3) Remove the AC supply. Check that RLA contacts 5 and 6 are reconnected.

10 V regulator

(4) Check at IC1 pin 12 for 10 V. If not, the regulator setting requires adjustment. See under 'Low level volts' in Table 3-2.

Low volts

(5) Decrease the DC supply voltage and check that at 10.7 V (at 6 A) TR1 switches on. Check that tag 8 is logically high.

Dividers

(6). Check IC2 pin 6 for 10 MHz divided by 16.

(7) Check IC2 pin 10 for 10 MHz divided by 64.

(8) Check that TR8 is pulsed on and off at the divided reference (156 kHz) rate.

Controller

(9) Decrease the DC supply voltage still further and check that at about 8.5 V on IC1 pin 12, TR4 and TR6 both switch off and TR9 switches on.

(10) Check that the controller has switched off by checking that pins 8 and 11 are both high.

(11) Restore the DC supply. Check IC1 pins 8 and 11 for complementary pulses.

(12) Vary the DC supply voltage and check for a varying mark/space ratio on IC1 pins 8 and 11.

Output

(13) Check tag 6 for +12 V and tag 4 for +5.05 V. If not, the error amplifier needs adjustment. See under '+5 V supply line' in Table 3-2.

DC FILTER BOARD AR4

Test equipment: Oscilloscope.

Circuit diagram: Chap 7, Fig. 7-46.

Checking filter

With no external DC supply connected, check that all unwanted signals (mainly at 50 Hz) on tags 3 and 4 are much reduced on tags 1 and 2.

SENSITIVE RECEIVER BOARD RX11

Test equipment: RF signal generator, DC voltmeter, spectrum analyzer, active probe, oscilloscope.

Circuit diagram: Chap. 7, Fig. 7-34.

0/10 dB attenuator

This is switched by RLA to 0 for signal levels below typically 4 mV (BNC socket) or 40 mV (N socket) and to -10 dB for signal levels above these. Proceed as follows:-

(1) On the 2955R, set the MODE to TRANSMITTER MONITOR, the TX FREQUENCY to 50 MHz, the modulation as appropriate and the RF IN/OUT to the BNC socket.

(2) Connect the signal generator to the RF IN/OUT BNC socket. Set the frequency to 50 MHz and the level to 1 mV.

(3) Use the active probe to connect the spectrum analyzer to IC1 pin 1. Check that the level is approxiamtely -47 dBm.

(4) Set the signal generator to -10 dBm. Check that the level at IC1 pin 1 is -20 dBm.

(5) If the levels in (3) and (4) are incorrect, check for the levels in para. 27.

The switching of this attenuator is controlled by the microprocessor in accordance with the RF level output. Check the following DC levels for 0 dB (RANGE 0 and 1) and -10 dB (RANGE 2):-

Position	0 dB	-10 dB
R74 input side	0	+5 V
Junction of D11 and TR6 collector	+5 V	0

20 dB RF amplifier and LO input

IC1 and IC2 give approximately 12 dB and 8 dB gain respectively. Proceed as follows:-

(1) Connect the signal generator between RX3 and the board RF input. Set the frequency to 50 MHz and the level to -55 dBm.

(2) Tune the spectrum analyzer to 50 MHz and connect the active probe in turn to IC1 pin 3 and IC3 pin 3. Check that the levels are approximately -43 dBm and -35 dBm respectively.

(3) Check that the DC voltages at IC1 pin 3 and IC2 pin 3 are approximately 5.0 V and 5.3 V respectively.

(4) Connect the active probe between RX12 and the board LO input. Check for the presence of the LO signal at approximately +8 dBm.

(5) Use the spectrum analyser to check that the LO frequency is as follows:-

RF IMAGE setting	LO frequency
UPPER	71.4 MHz
LOWER	28.6 MHz

Mixer

The IF is 21.4 MHz. The mixer conversion loss is typically 7 dB. Check the conversion loss as follows:-

(1) Tune the spectrum analyzer to 21.4 MHz and connect the active probe to the junction of C7, C8, L5, R7 and R8.

(2) Assuming that the 0/10 dB attenuator is at 0, check that the IF level at the junction is approximately 10 dB (20 - 7 - 3) above the input level.

20 dB IF 180 kHz band-pass amplifier

Check the response as follows:-

(1) Connect the tracking generator of the spectrum analyzer to the RF IN/OUT BNC socket. Set the level to -60 dBm.

(2) On RX11, remove the link on PLB.

(3) On the 2955R, set the TX FREQUENCY to 21.4 MHz.

(4) Tune the spectrum analyzer to 21.4 MHz and set the span to 1 MHz/division. Connect the active probe to TP1.

(5) On the spectrum analyzer, check that the response is as follows:-

Bandwidth	Frequency
3 dB	180 kHz ±40 kHz
60 dB	2 MHz approximately

(6) The response is affected by the lid being removed, especially the centre frequency. If there is any doubt about the correct shape, proceed as described in Chap. 5-2 para. 39.

12 kHz band-pass filter

Check the response as follows:-

(1) On the TRANSMITTER MONITOR display, set the IF FILTER to 12 kHz.

(2) Tune the spectrum analyzer to 21.4 MHz and set the span to 5 kHz/division. Connect the active probe to the junction of C46, D3, D4 and R38.

(3) On the spectrum analyzer, check that the response is as follows:-

Bandwidth	Frequency
3 dB	12kHz +6/-2 kHz
60 dB	80 kHz approximately

This filter is switched by RLB and RLC. When the filter is not in circuit, the pin diode switch D1 and D2 form an alternative signal path. Check the following DC levels:–

Position	12 kHz	180 kHz
IC10 pin 1	–12 V	+8 V
R76 input side	0 V	+5 V

0/32 dB amplifier

This is switched to +32 dB for signal levels below typically 150 μV and to 0 for signal levels above this level. Proceed as follows:–

(1) Connect the signal generator to the RF IN/OUT BNC socket. Set the signal generator frequency and the TX FREQUENCY on the 2955R to the same figure. Set the signal generator level to 50 μV.

(2) Select the CALIBRATION MODE display by pressing in turn the HELP, TX MON ON-OFF, AC DC, VERT ⇕, FREQ ↓ and REP SWEEP keys.

(3) On the display, check that RANGE 0 is indicated.

(4) Increase the signal level until the SIGNAL STRENGTH ADC reading is 231. At this point, check that the RANGE changes to 1 and that the SIGNAL STRENGTH ADC reading is approximately 135. If not, further examination is necessary.

(5) If the ADC readings are suspect, monitor the gain change by using an active probe connected to TP2.

Check the following DC levels for 0 dB (RANGE 1 and 2) and +32 dB (RANGE 0):–

Position	0 dB	+32 dB
IC5 pin 3	+8 V	+8 V
IC10 pin 7	–12 V	+8 V

AGC amplifier

The IF output has to be terminated in approximately 50 Ω. Otherwise, the AGC loop may oscillate. The amplifier gain is dependent on the current drive from IC9 pin 8. This relies on a peak detector to measure the amplifier output level, an AGC buffer to linearize the peak detector output, a loop filter and a voltage to current converter. The link formed by PLB can be removed to facilitate fault finding in the AGC loop.

38 dB amplifier

IC7 and IC8 give approximately 32 dB and 12 dB gain to give a gain of 38 dB +6/–0 dB. Check the following DC levels:–

Position	DC level
IC7 pin 3	+8 V
IC8 pin 3	+5 V

Select the CALIBRATION MODE display as previously described and check the following typical DC levels:-

SIGNAL STRENGTH ADC reading	IC10 pin 14	IC9 pin 1
230	+4.69 V	-4.69 V
200	+4.05 V	-4.05 V
150	+3.05 V	-3.05 V
125	+2.51 V	-2.51 V
110	+2.23 V	-2.23 V

Temperature sensor

The output of the temperature sensor is from 0 to 5 V by 65.095 mV/°C with 0 mV at 0°C. This is fed to the ADC on AB4/1. Select the CALIBRATION MODE display, as previously described, to check the TEMPERATURE ADC reading.

Bypass switch driver

When TRANSMITTER MONITOR mode is selected, the input signal from the RF IN/OUT connectors is routed through RX3 to the sensitive receiver. The relays in RX3 require a pulse of typically 20 ms duration. On the oscilloscope, check this at TR15 collector and TR13 collector.

Local oscillator switch driver

When TRANSMITTER MONITOR mode is selected, the output signal from the signal generator is routed through RX2 and RX12 to the mixer in the sensitive receiver. The relays in RX2 require a pulse of typically 20 ms duration. On the oscilloscope, check this at TR11 collector and TR9 collector.

Output buffer

The AGC voltage is buffered by IC10d and this voltage is fed to the ADC on AB4/1 to indicate the RF level using an algorithm which incorporates the 0/10 dB attenuator setting, the 0/32 dB amplifier setting , temperature data and calibration data to correct for frequency and level variations. Select the CALIBRATION MODE display, as previously described, to check the SIGNAL STRENGTH ADC reading.

LO driver 21.4 MHz notch filter switch driver

At the frequencies given in para. 42, check the following DC levels for the RX12 filter in circuit and out of circuit:-

Position	Filter In	Filter Out
R72 input side	0	+5 V
Junction of D10 and TR5 collector	+5 V	0

LOCAL OSCILLATOR DRIVER BOARD RX12

Test equipment: Spectrum analyzer, active probe, oscilloscope.

Circuit diagram: Chap. 7, Fig. 7-51.

21.4 MHz notch filter

This is switched by RLA when the TX FREQUENCY is set as follows:-

TX FREQUENCY	RF IMAGE LOWER	RF IMAGE UPPER
0.1 to 10 MHz	Not available	Out
10 to 21.8 MHz	Not available	In
21.8 to 34.8 MHz	In	In
34.8 to 52.8 MHz	Out	In
52.8 to 978.6	In	In
978.6 to 1000 MHz	In	Not available

Check the response as follows:-

(1) On the 2955R, set the MODE to TRANSMITTER MONITOR and the TX FREQUENCY to greater than 52.8 MHz.

(2) Connect the tracking generator of the spectrum analyzer between RX2 and the board RF input.

(3) Set the spectrum analyzer to 21.4 MHz centre frequency and 1 MHz/division.

(4) Connect the active probe to the junction of RLA pin 1 and C6. Check that the response is as shown in Fig. 5-2-16.

(5) If the spectrum analyzer display is almost flat, then is is likely that the filter is not in circuit. See para. 42 to check the switch driver.

(6) If necessary, adjust the filter response by resetting L1, L2, L3 and L4.

(7) Set the TX FREQUENCY to less than 10 MHz. Check that the response is flat.

8 dB amplifier

Check the gain of IC1. If the gain is not approximately 8 dB, check that the voltage on IC1 pin 3 is 5.5 ±0.5 V.

Chapter 6

REPLACEABLE PARTS

INTRODUCTION

Each sub-assembly or printed circuit board in this instrument has been allocated a unit identification, e.g. A0/1, AA2, AB1/1 etc. The complete component reference carries its unit number as a prefix e.g. AB1/1 C3 (capacitor C3 on the mother board) but, for convenience in the text and on circuit diagrams, the prefix is not used. However when ordering replacements or in correspondence, quote the complete component reference.

COMPONENT VALUES

One or more of the components fitted in the equipment may differ from those listed in this chapter for any of the following reasons:-

(a) Components that have SIC after their circuit designator have their values selected during test to achieve particular performance limits.

(b) Owing to supply difficulties, components of different value or type may be substituted provided the overall performance of the equipment is maintained.

(c) As part of a policy of continuous development, components may be changed in value or type to obtain detail improvements in performance.

When there is a difference between the component fitted and the one listed, always use as a replacement the same type and value as found in the equipment.

ORDERING

When ordering replacements, address the order to our Service Division (address on rear cover) or nearest agent and specify the following for each component required:-

(1) Type# and serial number of equipment.

(2) Complete circuit reference.

(3) Description.

(4) Part number.

#As given on the serial number label at the rear of the equipment; if this is superseded by a model number label, quote the model number instead of the type number.

Cir. Ref.	MI part number	Description

ELECTRICAL COMPONENTS

Overall assembly A0

When ordering, prefix circuit reference with A0.

C1	26426-093	CAPACITOR FIXED ALUMINIUM 4700uF -10/+50% 40V ELECTROLYTIC, TAG TERMINATIONS,
C2	26426/093	CAPACITOR FIXED ALUMINIUM 4700uF -10/+50% 40V ELECTROLYTIC, TAG TERMINATIONS,
C3	26415/820	CAPACITOR FIXED ALUMINIUM 220uF -20/+100% 63V ELECTROLYTIC, AXIAL, (LOOSE).
C4	26582/679	CAPACITOR FIXED POLYCARBONATE 470nF +/-10% 100V RADIAL, 15.2mm PWP, WIRES 20mm MIN LONG, (LOOSE)
C901	26343/498	CAPACITOR FIXED CERAMIC 18pF +/-2% 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED)
C902	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED)
D1	28359-190	DIODE RECTIFIER, BY260-200... BRIDGE, 200V 12A 2Vf @ 7A, ENCAPSULATED, 22.6mm DIA
FS1	23411/059	FUSE T/LAG 0.8A 20x5 or
	23411/064	FUSE T/LAG 1.6A 20x5
FS2	23411/059	FUSE T/LAG 0.8A 20x5 or
	23411/064	FUSE T/LAG 1.6A 20x5
FS3	23411/065	FUSE T/LAG 6.3A 20x5
	23416/192	FUSE HOLDER PANEL 20x5
FS4	23411/204	FUSE T/LAG 1.6A 31.8x6.35
	23416/320	FUSE HOLDER IN-LINE 31.8x6.35
LS1	23646/109	LOUDSPEAKER ROUND, 8R 200mW - 2.25in DIA, 0.85in DEEP.
R4	24773/233	RESISTOR FIXED METAL-FILM 22R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED)
X3	23635-845	FERRITE BEADS, 5mm DIA
X4	23635-845	FERRITE BEADS, 5mm DIA
	23635/811	FERRITE BEADS, 8mm DIA
	23467/260	OPTO SHAFT ENCODER
	44533/153	PROGRAMMED EPROM AB3/2 IC33

Cir. Ref.	MI part number	Description

Overall assembly A0 (contd.)

	44533/400	PROGRAMMED EPROM KIT AB4/2 IC9 & IC10
	44533/401	PROGRAMMED EPROM AB4/2 IC13
	44533/351	PROGRAMMED EPROM AB6/1 IC4
	44533/351	PROGRAMMED EPROM AB6/1 IC5
	23423/150	CON MAINS PLUG, 3 WAY, RF FILTER
	23462/266	SW TOG 4CO MIN 0N-0N
	23462/881	SW PART TOG LEVER CAP BLACK
	37561/105	COVER MAINS SW 4 POLE
	23467/161	SW SLICE 2CO PANEL MTG
	23443/442	CON-RF BNC SOCKET
	23424/535	CON DIN SOCKET, 7 CONTACTS (ACCESSORY IN/OUT)
	43990/087	TRANSFORMER MAINS
	44990/903	FAN ASSEMBLY
	28235/617	CATHODE RAY TUBE M19/H8GH
	28238/157	MAGNET, CRT-CORRECTOR, 3mm
	28238/158	MAGNET, CRT-CORRECTOR, 2mm
		CABLE ASSEMBLIES, COMMON (WITHOUT OR WITH OPTION 1):-
	43138/101	(TO IF OUT SOCKET), (TO AC1 15 & 16)
	43137/801	BNC SOCKET (RF IN/OUT), SMB SOCKET (TO AC0/2)
	43130/167	BNC SOCKET (AF INPUT), SMB SOCKET (TO AB1/1 PLR)
	43130/170	BNC SOCKETS (AF GEN OUTPUT & EXT MOD INPUT), CRIMP SOCKET (TO AB1/1 PLK)
	43130/194	CRIMP SOCKET 2 WAY (TO AA1 PLB), (TO AA0 PLA)
	43130/194	CRIMP SOCKET 2 WAY (TO AA1 PLC), (TO AA0 PLB)
	43130/194	CRIMP SOCKET 2 WAY (TO AA1 PLE), (TO AC0/2)
	43137/469	CRIMP SOCKET 2 WAY (TO AB1/1 PLP), (TO SPEAKER)
	43137/475	CRIMP SOCKET 2 WAY (TO AB1/1 PLS), (TO DE-MOD OUT SOCKET)
	43130/196	CRIMP SOCKET 3 WAY (TO AA4/1 PLA), (TO AB1/1 PLU)
	43137/478	CRIMP SOCKET 3 WAY (TO AC1 PLB), (TO AF2/2)
	43137/470	CRIMP SOCKET 4 WAY (TO AC1 PLA), (TO CRT COILS)
	43137/473	CRIMP SOCKET 4 WAY (TO AA2 PLB), (TO AB1/1 PLF)
	43137/990	CRIMP SOCKETS 4 WAY (TO ENCODER, TO AB1/1 PLX)
	43130/944	CRIMP SOCKET 7 WAY (TO AB1/1 PLJ), (TO ACCESSORY IN/OUT SOCKET& SPEAKER)
	43137/233	CRIMP SOCKET 8 WAY (TO AA4/1 PLB), (TO AB1/1 SKA)
	43137/476	CRIMP TERMINAL 5 WAY (TO AR4/1 PLB), (TO CHASSIS COMPS)
	43137/477	CRIMP TERMINAL 8 WAY (TO AB1/1 PLE), (TO AR1/1)
	43130/165	N SOCKET (RF IN/OUT), SMA PLUG (TO AC0/2)
	43130/183	RIBBON SOCKET 10 WAY (TO AB1/1 PLG), (TO AF2/2)
	43130/184	RIBBON SOCKET 10 WAY (TO AA1 PLA), (TO AB1/1 SKF)
	43130/227	SMB SOCKET (TO AA0), (TO IF OUT SOCKET)
	43130/169	SMB SOCKET (TO AA0 PLB), CRIMP SOCKET (TO AB1/1 PLY)
	43130/199	SMB SOCKET (TO AA0), CRIMP SOCKET (TO AB1/1 PLW)
	43130/201	SMB SOCKET (TO AB1/1 PLB) (TO AC1 16)

Cir. Ref.	MI part number	Description

Overall assembly A0 (contd.)

	43130/447	SMB SOCKETS (AA0 SKB, SKQ, SKR, SKS), CRIMP (AB1/1 PLU 1, 11,9, 3)
	43130/202	SMB SOCKET (TO AB1/1 PLT), (TO AR1/1 2)
	43130/203	SMB SOCKET (TO AC1 PLC), (TO EXT STD 1 MHz SOCKET)
		CABLE ASSEMBLIES, WITHOUT OPTION 1:-
	43130/168	SMC SOCKETS (TO AC0/2, TO AA0 PLC)
	43130/193	SMA PLUGS (TO AC0/2, TO AD0)
	43137/533	SMA PLUG (TO AD0), SMC SOCKET (TO AA0)
		CABLE ASSEMBLIES, OPTION 1 ONLY:-
	43137/513	CRIMP SOCKET 3 WAY (TO RX12 PLA), CRIMP SOCKET 6 WAY (TO RX1 PLC), (TO RX1 CAPS)
	43137/514	CRIMP SOCKET 10 WAY (TO AA0 PLN), (TO AA0 CAPS)
	43137/511	RIBBON SOCKET 16 WAY (TO RX1 PLA), (TO AA0 CAPS)
	43137/512	RIBBON SOCKET 20 WAY (TO AA0 PLZ), (TO AA0 CAPS)
	43130/189	RIBBON SOCKET 20 WAY (TO AB1/1 PLH), PCB TRANSITION TO AF1/2)
	43137/534	SMA PLUG (TO RX2), SMC SOCKET (TO AA0)
	43137/535	SMA PLUG (TO RX2), SMC SOCKET (TO RX1)
	43137/540	SMA PLUGS (TO RX2, TO AC0/2)
	43137/537	SMA PLUG (TO RX3), SMC SOCKET (TO RX1)
	43137/539	SMA PLUG (TO RX3), SMC SOCKET (TO AC0/2)
	43137/536	SMA PLUG (TO RX3), SMC SOCKET (TO AA0)
	43137/538	SMA PLUGS (TO RX3, TO RX1)

Cir. Ref.	MI part number	Description

RF tray assembly AA0

When ordering, prefix circuit reference with AA0.

This is not available as a complete unit.

C1	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C2	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C3	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C4	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C5	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C6	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C7	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C8	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C9	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C11	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C13	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C14	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C15	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C17	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C18	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C19	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C20	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C21	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C22	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C23	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C24	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C25	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C26	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C27	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C28	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING

Cir. Ref.	MI part number	Description

RF tray assembly AA0 (contd.)

Cir. Ref.	MI part number	Description
C29	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C30	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C31	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C32	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C33	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C34	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C35	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C36	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C37	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C38	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C39	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C40	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C41	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C42	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C43	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C44	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C45	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C46	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C47	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C48	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3 9mm MOUNTING
C49	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C50(SIC)	26373/855	CAPACITOR FIXED CERAMIC 56pF +/-20% 500V N1500 FEED-THROUGH, SCREW-IN MOUNTING, 2BA THREAD WITH
C51	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C52	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C53	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C54	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C55	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C56	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING

Cir. Ref.	MI part number	Description

RF tray assembly AA0 (contd.)

Cir. Ref.	MI part number	Description
C57	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C60	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C61	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C62	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C63	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
L1	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L2	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS,
L3	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS,
L4	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS,
L5	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS,
L6	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS,
L7	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS,
L8	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS,
L9	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L11	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L12	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L13	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L14	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L15	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L16	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L17	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L18	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
L19	23642/552	INDUCTOR FIXED 3.3uH +/- 10% COATED-LACQUER, MINIATURE, 350mA 1R6 MAX, 32 Q @ 7.9 MHz, 115 MHz
L20	23642/552	INDUCTOR FIXED 3.3uH +/- 10% COATED-LACQUER, MINIATURE, 350mA 1R6 MAX, 32 Q @ 7.9 MHz, 115 MHz
L21	23642/552	INDUCTOR FIXED 3.3uH +/- 10% COATED-LACQUER, MINIATURE, 350mA 1R6 MAX, 32 Q @ 7.9 MHz, 115 MHz
L23	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.

RF tray assembly AA0 (contd.)

Cir. Ref.	MI part number	Description
PLA	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
PLB	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
PLD	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
PLE	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
PLF	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
PLG	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
PLH	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
R1	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/059	RESISTOR FIXED METAL-FILM 270R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
X421	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA,
X422	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA,
X423	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA,
X424	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA,
X425	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA,
X427	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA,
		CABLE ASSEMBLIES:-
	43130/195	CRIMP SOCKET 2 WAY (TO AA3 PLC), (TO AA0 C20)
	43137/472	CRIMP SOCKET 2 WAY (TO AA1 PLD), (TO AA0 CAPS)
	43137/474	CRIMP SOCKET 9 WAY (TO AA3 PLA), (TO AA0 CAPS)
	43130/182	RIBBON SOCKET 10 WAY (TO AA3 PLB), (TO AA0 C26-34)
	43130/186	RIBBON SOCKET 14 WAY (TO AA2 PLA), (TO AA0 C1-15)
	43130/187	RIBBON SOCKET 20 WAY (TO AB1/1 PLA), (TO AA0 CAPS)
	43130/188	RIBBON SOCKET 20 WAY (TO AB1/1 PLF), (TO AA0 CAPS)

RF modulation meter board AA1

When ordering, prefix circuit reference with AA1.

Cir. Ref.	MI part number	Description
	44828/878	Complete unit
C1	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C2	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C3	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C4	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C5	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C6	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C7	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C9	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C10	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C11	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C12	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C13	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C14	26486/225	CAPACITOR FIXED TANTALUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C15	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C16	26383/583	CAPACITOR FIXED CERAMIC 680pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C17	26383/583	CAPACITOR FIXED CERAMIC 680pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C18	26582/431	CAPACITOR FIXED POLYESTER 22nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C19	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C21	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C22	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C23	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C24	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C25	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C26	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

RF modulation meter board AA1 (contd.)

C27	26582/212	CAPACITOR FIXED POLYESTER 150nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE OR TAPED).
C28	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C29	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C31	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C32	26538/557	CAPACITOR FIXED POLYSTYRENE 100pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C33	26538/557	CAPACITOR FIXED POLYSTYRENE 100pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C34	26383/586	CAPACITOR FIXED CERAMIC 1.8nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C35	26421/141	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C36	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C37	26421/114	CAPACITOR FIXED ALUMINIUM 22uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C38	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C39	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C40	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C41	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C42	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C43	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C44	26421/142	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C45	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C46	26421/142	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C47	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C48	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C49	26582/427	CAPACITOR FIXED POLYESTER 470nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C51	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C52	26486/219	CAPACITOR FIXED TANTALUM 4.7uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C53	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C54	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C55	26343/495	CAPACITOR FIXED CERAMIC 3.3pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C56	26343/495	CAPACITOR FIXED CERAMIC 3.3pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

RF modulation meter board AA1 (contd.)

Cir. Ref.	MI part number	Description
C57	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C58	26343/436	CAPACITOR FIXED CERAMIC 270pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C61	26383/583	CAPACITOR FIXED CERAMIC 680pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C62	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C63	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C64	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C65	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C66	26582/427	CAPACITOR FIXED POLYESTER 470nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C67	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C68	26582/427	CAPACITOR FIXED POLYESTER 470nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C69	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C70	26343/484	CAPACITOR FIXED CERAMIC 2.7pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C71	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
D1	28381/132	DIODE VARI-CAP BB809... 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D2	28381/132	DIODE VARI-CAP BB809... 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D3	28381/132	DIODE VARI-CAP BB809... 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D4	28381/132	DIODE VARI-CAP BB809... 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D5	28371/757	DIODE ZENER BZX79-C9V1... 500mW 9.1V 5% 250mA AXIAL, DO-35, (TAPED).
D6	28371/401	DIODE ZENER BZX79-C5V1... 500mW 5.1V 5% 250mA AXIAL, DO-35, (TAPED).
D7	28349/020	DIODE SCHOTTKY BAR19... 4V 30mA 0.6Vf @ 10mA, AXIAL, DO-35, (TAPED).
D8	28349/020	DIODE SCHOTTKY BAR19... 4V 30mA 0.6Vf @ 10mA, AXIAL, DO-35, (TAPED).
D9	28349/013	DIODE SCHOTTKY BAT42... 400mW 30V 0.5Vf @ 50mA FAST-SWITCHING, AXIAL, DO-35, (TAPED).
IC1	28464/117	IC DIGITAL COUNTER 74LS93.... 4 BIT, BINARY, DIVIDE BY 2,8 OR 16, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC2	28461/924	IC ANALOGUE MODULATR/DEMODULATOR MC1496... BALANCED, LINEAR, MONOLITHIC, 14 PIN,
IC3	28461/937	IC ANALOGUE PHASE-LOCKED-LOOP MC145145... 4 BIT DATA-BUS INPUT, CMOS, 18 PIN, DUAL-IN-LINE.

Cir. Ref.	MI part number	Description

RF modulation meter board AA1 (contd.)

Cir. Ref.	MI part number	Description
IC4	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC5	28461/748	IC ANALOGUE VOLTAGE-REGULATOR LM337LZ... 37V 100mA NEGATIVE ADJUSTABLE, LINEAR, MONOLITHIC, 3 PIN,
IC6	28466/331	IC DIGITAL NAND-GATE 74S00... 2 INPUT, QUAD, TTL-SCHOTTKY, 14 PIN, DUAL-IN-LINE.
IC7	28461/734	IC ANALOGUE VOLTAGE-REGULATOR 78L05AC... 5V 100mA POSITIVE, LINEAR, MONOLITHIC, 3 PIN, TO-92.
L1	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L2	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L3	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L4	23642/464	INDUCTOR FIXED 1uH +/- 5% MOULDED-EPOXY, 830mA 0R29 MAX, 50 Q @ 25 MHz, 200 MHz SRF, AXIAL,
L5	23642/464	INDUCTOR FIXED 1uH +/- 5% MOULDED-EPOXY, 830mA 0R29 MAX, 50 Q @ 25 MHz, 200 MHz SRF, AXIAL,
L6	23642/561	INDUCTOR FIXED 100uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 11R MAX, 50 Q @ 2.5 MHz, 7 MHz
L7	23642/562	INDUCTOR FIXED 150uH +/- 10% COATED-LACQUER, MINIATURE, 130mA 13R MAX, 40 Q @ 0.79 MHz, 5.5 MHz
L8	23642/558	INDUCTOR FIXED 33uH +/- 10% COATED-LACQUER, MINIATURE, 210mA 5R2 MAX, 55 Q @ 2.5 MHz, 20 MHz
L9	23642/563	INDUCTOR FIXED 220uH +/- 10% COATED-LACQUER, MINIATURE, 110mA 17R MAX, 45 Q @ 0.79 MHz, 4.2 MHz
L11	23642/562	INDUCTOR FIXED 150uH +/- 10% COATED-LACQUER, MINIATURE, 130mA 13R MAX, 40 Q @ 0.79 MHz, 5.5 MHz
L12	23642/565	INDUCTOR FIXED 470uH +/- 10% COATED-LACQUER, MINIATURE, 87mA 26R5 MAX, 45 Q @ 0.79 MHz, 2.9 MHz
PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLB	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLC	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLD	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLE	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

RF modulation meter board AA1 (contd.)

R5	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	25711/643	RESISTOR VARIABLE CERMET LINEAR, 50K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, HORIZONTAL-PCB,
R12	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/067	RESISTOR FIXED METAL-FILM 560R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/096	RESISTOR FIXED METAL-FILM 9K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	25711/639	RESISTOR VARIABLE CERMET LINEAR, 2K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, HORIZONTAL-PCB,
R28	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/135	RESISTOR FIXED METAL-FILM 390K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R30	24772/037	RESISTOR FIXED METAL-FILM 33R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/118	RESISTOR FIXED METAL-FILM 75K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/090	RESISTOR FIXED METAL-FILM 5K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

RF modulation meter board AA1 (contd.)

R34	24772/091	RESISTOR FIXED METAL-FILM 5K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/090	RESISTOR FIXED METAL-FILM 5K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/091	RESISTOR FIXED METAL-FILM 5K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/043	RESISTOR FIXED METAL-FILM 56R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/043	RESISTOR FIXED METAL-FILM 56R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R40	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/140	RESISTOR FIXED METAL-FILM 820K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/132	RESISTOR FIXED METAL-FILM 300K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R48	24772/063	RESISTOR FIXED METAL-FILM 390R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R49	24772/082	RESISTOR FIXED METAL-FILM 2K4 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R50	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R53	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R54	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R55	24772/067	RESISTOR FIXED METAL-FILM 560R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R56	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R57	24762/639	RESISTOR FIXED METAL-FILM 360R +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R58	24762/571	RESISTOR FIXED METAL-FILM 61R1 +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R59	24762/571	RESISTOR FIXED METAL-FILM 61R1 +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R60	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Ref.	number	Description

RF modulation meter board AA1 (contd.)

R61	24331/984	RESISTOR FIXED CARBON-COMPOSITION 680R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R62	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R63	24331/965	RESISTOR FIXED CARBON-COMPOSITION 560R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R64	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R65	24331/988	RESISTOR FIXED CARBON-COMPOSITION 22R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R66	24331/976	RESISTOR FIXED CARBON-COMPOSITION 220R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R67	24331/984	RESISTOR FIXED CARBON-COMPOSITION 680R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R68	24331/988	RESISTOR FIXED CARBON-COMPOSITION 22R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R69	24331/988	RESISTOR FIXED CARBON-COMPOSITION 22R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R71	24762/558	RESISTOR FIXED METAL-FILM 50R +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R72	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R73	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R74	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R75	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R76	24772/068	RESISTOR FIXED METAL-FILM 620R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R77	24772/095	RESISTOR FIXED METAL-FILM 8K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R78	24772/084	RESISTOR FIXED METAL-FILM 3K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R79	24772/044	RESISTOR FIXED METAL-FILM 62R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R81	24772/091	RESISTOR FIXED METAL-FILM 5K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R82	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R83	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R84	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R85	24772/054	RESISTOR FIXED METAL-FILM 160R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R86	25685/244	THERMISTOR NEGATIVE-TC BEAD, 5mm 4K @ 25 DEG.C, 4.4 %/DEG.C +/- 2% 875mW 5mm PWP, RADIAL.
R87	24772/084	RESISTOR FIXED METAL-FILM 3K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R88	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R89	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R90	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

RF modulation meter board AA1 (contd.)

Cir. Ref.	MI part number	Description
R91	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R92	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R93	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R94	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R95	25685/248	THERMISTOR NEGATIVE-TC BEAD, 6mm 50R @ 25 DEG.C, 3.3 %/DEG.C +/- 1% 5mm PWP, UNCOATED, RADIAL.
R96	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
T1	43590/141	WOUND-PART TRANSFORMER, BALUN, RING-CORE, 5:5 TURNS, TWISTED BIFILAR WOUND, UNMOUNTED,
TR1	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR2	28431/767	TRANSISTOR PNP BIPOLAR MPS4258.... 12V 700MHz 1W 80mA 30hFE @ 50mA, TO-92, (LOOSE).
TR3	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR4	28459/028	TRANSISTOR N-CHANNEL-DEPLETION JFET J310.... 25V 350mW 24mA TO-92, (LOOSE).
TR5	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR6	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR7	28452/157	TRANSISTOR NPN BIPOLAR BFY90.... 15V 1GHz 200mW 25mA 25-150hFE @ 2mA, 4 LEAD, TO-72.
TR8	28452/157	TRANSISTOR NPN BIPOLAR BFY90.... 15V 1GHz 200mW 25mA 25-150hFE @ 2mA, 4 LEAD, TO-72.
TR9	28459/028	TRANSISTOR N-CHANNEL-DEPLETION JFET J310. .. 25V 350mW 24mA TO-92, (LOOSE).
TR11	28452/777	TRANSISTOR NPN BIPOLAR BC109B,C.... 20V 150MHz 300mW 100mA 410hFE @ 2mA, TO-18.
TR12	28452/777	TRANSISTOR NPN BIPOLAR BC109B,C.... 20V 150MHz 300mW 100mA 410hFE @ 2mA, TO-18.
TR13	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR14	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR15	28455/421	TRANSISTOR NPN BIPOLAR BC237A.... 45V 150MHz 200mW 100mA 170hFE @ 2mA, TO-92, (LOOSE).

RF counter board AA2

When ordering, prefix circuit reference with AA2.

Cir. Ref.	MI part number	Description
	44828/879	Complete unit
C1	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C2	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C3	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C4	26343/490	CAPACITOR FIXED CERAMIC 1.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C5	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C6	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C7	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C8	26343/490	CAPACITOR FIXED CERAMIC 1.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C9	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C10	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C11	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C12	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C13	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C14	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C15	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED)
C16	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C17	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C18	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C19	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C20	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C21	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C22	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C23	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C24	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C25	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

RF counter board AA2 (contd.)

C26	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C27	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C28	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C29	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C30	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C31	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C32	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C33	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C34	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
D1	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D2	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D3	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D4	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D5	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D6	28349/014	DIODE SCHOTTKY BAT29... 100mW 5V 0.55Vf @ 10mA SMALL-SIGNAL, AXIAL, DO-35, (TAPED).
IC1	28461/351	IC ANALOGUE WIDEBAND-AMPLIFIER OM345... SINGLE, 12V 400KHz-1GHz, 12dB, VHF/UHF, HYBRID, 5 PIN,
IC2	28461/351	IC ANALOGUE WIDEBAND-AMPLIFIER OM345. . SINGLE, 12V 400KHz-1GHz, 12dB, VHF/UHF, HYBRID, 5 PIN,
IC3	28461/364	IC ANALOGUE LIMITING-AMPLIFIER SL952.. 1GHz, LINEAR, 14 PIN, DUAL-IN-LINE.
IC4	28464/042	IC DIGITAL COUNTER CLA61053... 10 DECADE, CUSTOM, MOS, 24 PIN, DUAL-IN-LINE.
IC5	28464/014	IC DIGITAL COUNTER 74LS90.. 4 BIT, DECADE, DIVIDE BY 2,5 OR 10, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC6	28464/024	IC DIGITAL DIVIDER SP8610B.... DIVIDE BY 4, 1.0GHz, PRESCALER, ECL, 14 PIN, DUAL-IN-LINE.
IC7	28464/027	IC DIGITAL DIVIDER SP8637B... DIVIDE BY 10, 400MHz, ECL, 16 PIN, DUAL-IN-LINE.
IC8	28466/219	IC DIGITAL NOR-GATE 10102... 2 INPUT, QUAD, ECL, 16 PIN, DUAL-IN-LINE.

RF counter board AA2 (contd.)

PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLB	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24762/571	RESISTOR FIXED METAL-FILM 61R1 +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R4	24762/631	RESISTOR FIXED METAL-FILM 247R +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R5	24762/571	RESISTOR FIXED METAL-FILM 61R1 +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R6	24772/009	RESISTOR FIXED METAL-FILM 2R2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R7	24762/558	RESISTOR FIXED METAL-FILM 50R +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R8	24762/557	RESISTOR FIXED METAL-FILM 53R3 +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R9	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24331/978	RESISTOR FIXED CARBON-COMPOSITION 33R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R11	24331/978	RESISTOR FIXED CARBON-COMPOSITION 33R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R12	24331/998	RESISTOR FIXED CARBON-COMPOSITION 120R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R13	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/095	RESISTOR FIXED METAL-FILM 8K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24331/984	RESISTOR FIXED CARBON-COMPOSITION 680R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R17	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R21	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

RF counter board AA2 (contd.)

Cir. Ref.	MI part number	Description
R24	24773/249	RESISTOR FIXED METAL-FILM 100R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24772/115	RESISTOR FIXED METAL-FILM 56K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R30	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24331/961	RESISTOR FIXED CARBON-COMPOSITION 180R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
RLA	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH.
TR1	28434/857	TRANSISTOR PNP BIPOLAR BCY70.... 40V 250MHz 350mW 200mA 50hFE @ 10mA, TO-18.
TR2	28434/857	TRANSISTOR PNP BIPOLAR BCY70.... 40V 250MHz 350mW 200mA 50hFE @ 10mA, TO-18.
TR3	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR4	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.

Ref.	number	Description

RF synthesizer and oscillator board AA3

When ordering, prefix circuit reference with AA3.

Ref.	number	Description
	44828/880	Complete unit
C1	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C2	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C3	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C4	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C5	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C6	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C7	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26343/498	CAPACITOR FIXED CERAMIC 18pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C9	26343/560	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R MULTILAYER, RADIAL, 2.5mm PWP, MONOLITHIC,
C11	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C12	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C13	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C14	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C15	26343/487	CAPACITOR FIXED CERAMIC 6 8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C16	26343/485	CAPACITOR FIXED CERAMIC 4.7pF +/-0 25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C17	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C18	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2 5mm PWP, (TAPED).
C19	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0 25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C21	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C22	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C23	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C24	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C25	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C26	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C27	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

RF synthesizer and oscillator board AA3 (contd.)

Cir. Ref.	MI part number	Description
C28	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C29	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C31	26343/485	CAPACITOR FIXED CERAMIC 4.7pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C32	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C33	26343/484	CAPACITOR FIXED CERAMIC 2.7pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C34	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C35	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C36	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C37	26386/766	CAPACITOR FIXED CERAMIC 15pF +/-5% 100V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C38	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C39	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C40	26386/954	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C41	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C42	26386/766	CAPACITOR FIXED CERAMIC 15pF +/-5% 100V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C43	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C44	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C45	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C46	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C47	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C48	26343/484	CAPACITOR FIXED CERAMIC 2.7pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C49	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C50	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C51	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C52	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C53	26343/495	CAPACITOR FIXED CERAMIC 3.3pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C54	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C55	26343/491	CAPACITOR FIXED CERAMIC 2.2pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

RF synthesizer and oscillator board AA3 (contd.)

Cir. Ref.	MI part number	Description
C56	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C57	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C58	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C59	26343/491	CAPACITOR FIXED CERAMIC 2.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C60	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C61	26343/495	CAPACITOR FIXED CERAMIC 3.3pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C62	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C63	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C64	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C65	26386/956	CAPACITOR FIXED CERAMIC 12pF +/-5% 100V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C66	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED)
C67	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2 5mm PWP, (TAPED).
C68	26386/955	CAPACITOR FIXED CERAMIC 10pF +/-0.25pF 100V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C69	26386/955	CAPACITOR FIXED CERAMIC 10pF +/-0.25pF 100V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C71	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C72	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C73	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C74	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C75	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED)
C76	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C77	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C78	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C79	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C80	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C81	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED)
C82	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C83	26421/114	CAPACITOR FIXED ALUMINIUM 22uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C84	26343/485	CAPACITOR FIXED CERAMIC 4.7pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

RF synthesizer and oscillator board AA3 (contd.)

Cir. Ref.	MI part number	Description
C85	26343/491	CAPACITOR FIXED CERAMIC 2.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C86	26343/495	CAPACITOR FIXED CERAMIC 3.3pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C87	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C88	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C89	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C90	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C91	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C92	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C93	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C94	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C95	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C96	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C97	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C98	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C101	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C102	26421/017	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 3.5mm PWP, LOW LEAKAGE WITH
C103	26582/431	CAPACITOR FIXED POLYESTER 22nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C104	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C105	26582/431	CAPACITOR FIXED POLYESTER 22nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C106	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C107	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C108	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C109	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C111	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C112	26421/121	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 63V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C113	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C114	26421/118	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C115	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

RF synthesizer and oscillator board AA3 (contd.)

Cir. Ref.	MI part number	Description
C116	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C117	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C118	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C119	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C121	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C122	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C123	26343/485	CAPACITOR FIXED CERAMIC 4.7pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C124	26343/502	CAPACITOR FIXED CERAMIC 1pF +/-0.5pF 63V P100 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
D1	28381/132	DIODE VARI-CAP BB809... 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D2	28381/132	DIODE VARI-CAP BB809 .. 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D3	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D4	28381/132	DIODE VARI-CAP BB809... 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D5	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D6	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D7	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D8	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D9	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D10	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D11	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D12	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D13	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D14	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D15	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D16	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D17	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D18	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).

Cir. Ref.	MI part number	Description

RF synthesizer and oscillator board AA3 (contd.)

D19	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D20	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D21	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D22	28381/132	DIODE VARI-CAP BB809... 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D23	28371/481	DIODE ZENER BZX79-C6V2... 500mW 6.2V 5% 250mA AXIAL, DO-35, (TAPED).
D24	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D25	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D26	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D27	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D28	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D29	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D30	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D31	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D32	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D33	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D101	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D102	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D103	28336/676	DIODE GENERAL-PURPOSE 1N4148 .. 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D104	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D105	28336/676	DIODE GENERAL-PURPOSE 1N4148.. 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D106	28624/104	LED RED, SIZE T1.3/4, 5mm DIA, TLUR5400... 1.6 Vf TYP, 40 mA If MAX, 0.8 mcd @ 20mA - DIFFUSED, WITH
D107	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D108	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D109	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D111	28349/013	DIODE SCHOTTKY BAT42... 400mW 30V 100mA 0.5Vf @ 50mA, FAST-SWITCHING, AXIAL, DO-35, (TAPED).
D112	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D113	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D114	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).

Ref.	... part number	Description

RF synthesizer and oscillator board AA3 (contd.)

Ref.	Part number	Description
D115	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D116	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
IC1	28461/371	IC ANALOGUE WIDEBAND-AMPLIFIER OM350... SINGLE, 12V 40MHz-860MHz, 18dB, VHF/UHF, HYBRID, 5 PIN,
IC2	28461/748	IC ANALOGUE VOLTAGE-REGULATOR LM337LZ... 37V 100mA NEGATIVE ADJUSTABLE, LINEAR, MONOLITHIC, 3 PIN,
IC3	28461/741	IC ANALOGUE VOLTAGE-REGULATOR LM317LZ... 37V 100mA POSITIVE ADJUSTABLE, LINEAR, MONOLITHIC, 3 PIN,
IC4	28461/371	IC ANALOGUE WIDEBAND-AMPLIFIER OM350... SINGLE, 12V 40MHz-860MHz, 18dB, VHF/UHF, HYBRID, 5 PIN,
IC101	28469/433	IC DIGITAL DIVIDER HEF4751.. UNIVERSAL DIVIDER, CMOS, 28 PIN, DUAL-IN-LINE.
IC102	28467/531	IC DIGITAL REGISTER 40105.. 4 BIT, 16 WORD FIFO, ASYNCHRONOUS MODE, TRI-STATE OUTPUTS, CMOS, 16
IC103	28466/207	IC DIGITAL NOR-GATE 4001... 2 INPUT, QUAD, CMOS, 14 PIN, DUAL-IN-LINE.
IC104	28469/433	IC DIGITAL DIVIDER HEF4751.. UNIVERSAL DIVIDER, CMOS, 28 PIN, DUAL-IN-LINE.
IC105	28467/531	IC DIGITAL REGISTER 40105.. 4 BIT, 16 WORD FIFO, ASYNCHRONOUS MODE, TRI-STATE OUTPUTS, CMOS, 16
IC106	28469/432	IC DIGITAL FREQ SYNTHESIZER 4750... CMOS, 28 PIN, DUAL-IN-LINE.
IC107	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC108	28464/015	IC DIGITAL DIVIDER SP8647B... DIVIDE BY 10/11, 200MHZ, ECL, 16 PIN, DUAL-IN-LINE.
IC109	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC111	28462/605	IC DIGITAL FLIP-FLOP/D-TYPE 10131.. DUAL, MASTER-SLAVE, ECL, 16 PIN, DUAL-IN-LINE.
IC112	28464/026	IC DIGITAL DIVIDER SP8685B... DIVIDE BY 10/11, 500MHz, PRESCALER, ECL, 16 PIN, DUAL-IN-LINE.
L1	23642/553	INDUCTOR FIXED 4.7uH +/- 10% COATED-LACQUER, MINIATURE, 760mA 0R035 MAX, 45 Q @ 7.9 MHz, 65 MHz
L2	44290/805	WOUND-PART INDUCTOR, 10uH, BEAD-CORE, 4 TURNS, UNMOUNTED.
L6	44290/805	WOUND-PART INDUCTOR, 10uH, BEAD-CORE, 4 TURNS, UNMOUNTED.
L14	44290/805	WOUND-PART INDUCTOR, 10uH, BEAD-CORE, 4 TURNS, UNMOUNTED.
L17	44290/805	WOUND-PART INDUCTOR, 10uH, BEAD-CORE, 4 TURNS, UNMOUNTED.
L28	23642/553	INDUCTOR FIXED 4.7uH +/- 10% COATED-LACQUER, MINIATURE, 760mA 0R035 MAX, 45 Q @ 7.9 MHz, 65 MHz

RF synthesizer and oscillator board AA3 (contd.)

Cir. Ref.	MI part number	Description
PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLB	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLC	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLD	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24331/985	RESISTOR FIXED CARBON-COMPOSITION 4R7 +/- 10% 125mW 150V AXIAL, (LOOSE OR TAPED).
R8	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R9	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R11	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R12	24331/961	RESISTOR FIXED CARBON-COMPOSITION 180R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R13	24772/077	RESISTOR FIXED METAL-FILM 1K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24331/978	RESISTOR FIXED CARBON-COMPOSITION 33R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R15	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/039	RESISTOR FIXED METAL-FILM 39R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG C, AXIAL, (TAPED).
R19	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R22	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R23	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

RF synthesizer and oscillator board AA3 (contd.)

R25	24331/998	RESISTOR FIXED CARBON-COMPOSITION 120R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R26	24331/957	RESISTOR FIXED CARBON-COMPOSITION 6R8 +/- 10% 125mW 150V AXIAL, (LOOSE OR TAPED).
R27	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/111	RESISTOR FIXED METAL-FILM 39K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R33	24331/992	RESISTOR FIXED CARBON-COMPOSITION 270R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R34	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24331/978	RESISTOR FIXED CARBON-COMPOSITION 33R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R40	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R42	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R43	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R46	24772/111	RESISTOR FIXED METAL-FILM 39K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/043	RESISTOR FIXED METAL-FILM 56R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R48	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R49	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED)
R53	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R54	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

RF synthesizer and oscillator board AA3 (contd.)

Cir. Ref.	MI part number	Description
R55	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R56	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R57	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R58	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R59	24772/111	RESISTOR FIXED METAL-FILM 39K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R61	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R62	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R63	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R64	24772/095	RESISTOR FIXED METAL-FILM 8K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R65	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R66	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R67	24331/998	RESISTOR FIXED CARBON-COMPOSITION 120R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R68	24331/974	RESISTOR FIXED CARBON-COMPOSITION 10R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R69	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R71	24331/990	RESISTOR FIXED CARBON-COMPOSITION 150R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R72	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R73	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R74	24331/978	RESISTOR FIXED CARBON-COMPOSITION 33R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R75	24331/992	RESISTOR FIXED CARBON-COMPOSITION 270R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R76	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R77	24772/063	RESISTOR FIXED METAL-FILM 390R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R78	24331/970	RESISTOR FIXED CARBON-COMPOSITION 4K7 +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R79	24331/983	RESISTOR FIXED CARBON-COMPOSITION 2K2 +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R81	24331/970	RESISTOR FIXED CARBON-COMPOSITION 4K7 +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R82	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R84	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R85	24331/983	RESISTOR FIXED CARBON-COMPOSITION 2K2 +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R86	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

RF synthesizer and oscillator board AA3 (contd.)

Ref.	number	Description
R87	24772/082	RESISTOR FIXED METAL-FILM 2K4 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R88	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R89	24331/965	RESISTOR FIXED CARBON-COMPOSITION 560R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R101	24681/668	RESISTOR NETWORK BUSSED, THICK-FILM, 2K7 2% 1W 50V 100 ppm/DEG.C, 9 RESISTORS, LOW PROFILE, 10 PIN,
R102	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R103	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R104	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R105	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R106	24772/109	RESISTOR FIXED METAL-FILM 33K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R107	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R108	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R109	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R110	24773/203	RESISTOR FIXED METAL-FILM 1R2 +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R111	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R112	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R113	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R114	24321/877	RESISTOR FIXED METAL-GLAZE 2M2 +/- 5% 250mW 1 6KV 200 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R115	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R116	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R117	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R118	24772/079	RESISTOR FIXED METAL-FILM 1K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R119	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R120	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R121	24772/038	RESISTOR FIXED METAL-FILM 36R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R122	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R123	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R124	24772/038	RESISTOR FIXED METAL-FILM 36R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R125	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

RF synthesizer and oscillator board AA3 (contd.)

Cir. Ref.	MI part number	Description
R126	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R127	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R128	24772/068	RESISTOR FIXED METAL-FILM 620R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R129	24772/068	RESISTOR FIXED METAL-FILM 620R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R130	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R131	24772/067	RESISTOR FIXED METAL-FILM 560R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R132	24772/138	RESISTOR FIXED METAL-FILM 560K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R133	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R134	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R135	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R136	24772/109	RESISTOR FIXED METAL-FILM 33K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R137	24772/077	RESISTOR FIXED METAL-FILM 1K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R138	25711/645	RESISTOR VARIABLE CERMET LINEAR, 200K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, HORIZONTAL-PCB,
R139	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R140	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R141	24331/964	RESISTOR FIXED CARBON-COMPOSITION 470R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R142	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R143	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R144	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R145	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R146	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R147	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R148(SIC)	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
TR1	28452/167	TRANSISTOR NPN BIPOLAR BFR90.... 15V 5GHz 180mW 25mA 40hFE @ 14mA, SURFACE MOUNTED, SOT-37
TR2	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR3	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).

RF synthesizer and oscillator board AA3 (contd.)

Cir. Ref.	MI part number	Description
TR4	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR5	28452/167	TRANSISTOR NPN BIPOLAR BFR90.... 15V 5GHz 180mW 25mA 40hFE @ 14mA, SURFACE MOUNTED, SOT-37.
TR6	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR7	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR8	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR9	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR11	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR12	28452/167	TRANSISTOR NPN BIPOLAR BFR90.... 15V 5GHz 180mW 25mA 40hFE @ 14mA, SURFACE MOUNTED, SOT-37.
TR13	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR101	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR102	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR103	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR104	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR105	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.

Cir. Ref.	MI part number	Description

LF synthesizer and output amplifier board AA4/1

When ordering, prefix circuit reference with AA4/1.

Cir. Ref.	MI part number	Description
	44829/613	Complete unit
C1	26343/484	CAPACITOR FIXED CERAMIC 2.7pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C2	26343/490	CAPACITOR FIXED CERAMIC 1.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C3	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C4	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C5	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C6	26343/498	CAPACITOR FIXED CERAMIC 18pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C7	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26383/592	CAPACITOR FIXED CERAMIC 1.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C9	26383/590	CAPACITOR FIXED CERAMIC 3.9nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C10	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C11	26582/437	CAPACITOR FIXED POLYESTER 150nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C12	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C13	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C14	26343/491	CAPACITOR FIXED CERAMIC 2.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C15	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C16	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C17	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C18	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C19	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C20	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C21	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C22	26383/590	CAPACITOR FIXED CERAMIC 3.9nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C23	26383/593	CAPACITOR FIXED CERAMIC 1.5nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C24	26383/590	CAPACITOR FIXED CERAMIC 3.9nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C25	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

LF synthesizer and output amplifier board AA4/1 (contd.)

Ref.	number	Description
C26	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C27	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C28	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C29	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C31	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C32	26383/589	CAPACITOR FIXED CERAMIC 3.3nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C33	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C34	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C35	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C36	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C37	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C38	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C39	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C40	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C41	26343/444	CAPACITOR FIXED CERAMIC 56pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C42	26343/430	CAPACITOR FIXED CERAMIC 39pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C43	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C44	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED)
C45	26343/444	CAPACITOR FIXED CERAMIC 56pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C46	26343/444	CAPACITOR FIXED CERAMIC 56pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C47	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C48	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C50	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C52	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C53	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C54	26343/485	CAPACITOR FIXED CERAMIC 4.7pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C55	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).

LF synthesizer and output amplifier board AA4/1 (contd.)

Cir. Ref.	MI part number	Description
C56	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C57	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C58	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C59	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C60	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C61	26386/759	CAPACITOR FIXED CERAMIC 22nF +/-20% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C62	26343/436	CAPACITOR FIXED CERAMIC 270pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C63	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C64	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C65	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C66	26386/759	CAPACITOR FIXED CERAMIC 22nF +/-20% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C67	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C68	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C69	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C70	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C71	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C72	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C73	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C74	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C75	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C76	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C77	26582/427	CAPACITOR FIXED POLYESTER 470nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C79	26878/402	CAPACITOR VARIABLE PTFE 2pF to 15pF 200 ppm/DEG.C, VERTICAL-PCB MOUNT, 5mm DIA, 5mm PWP, 2 PIN, CODED
C80	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C81	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C82	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C83	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

LF synthesizer and output amplifier board AA4/1 (contd.)

C84	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C85	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C86	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C87	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C88	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C90	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C91	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C92	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C93	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C94	26343/560	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R MULTILAYER, RADIAL, 2.5mm PWP, MONOLITHIC,
C95	26343/560	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R MULTILAYER, RADIAL, 2.5mm PWP, MONOLITHIC,
D1	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D2	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D3	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D4	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D5	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1 2Vf @ 100mA AXIAL, DO-34, (TAPED).
D6	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D7	28383/997	DIODE PIN 5082-3379... 250mW 50V VHF-UHF ATTENUATOR, AXIAL, HP-OUTLINE-15, (TAPED)
D8	28383/997	DIODE PIN 5082-3379... 250mW 50V VHF-UHF ATTENUATOR, AXIAL, HP-OUTLINE-15, (TAPED).
D9	28383/997	DIODE PIN 5082-3379... 250mW 50V VHF-UHF ATTENUATOR, AXIAL, HP-OUTLINE-15, (TAPED).
D11	28383/997	DIODE PIN 5082-3379... 250mW 50V VHF-UHF ATTENUATOR, AXIAL, HP-OUTLINE-15, (TAPED).
D12	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D13	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D14	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D15	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1 2Vf @ 100mA AXIAL, DO-34, (TAPED).
D16	28349/011	DIODE SCHOTTKY 5082-2826... 250mW 15V 1Vf @ 20mA, (BATCH MATCHED - 5082-2811), AXIAL, HP-OUTLINE-15,

LF synthesizer and output amplifier board AA4/1 (contd.)

Cir. Ref.	MI part number	Description
D17	28349/011	DIODE SCHOTTKY 5082-2826... 250mW 15V 1Vf @ 20mA, (BATCH MATCHED - 5082-2811), AXIAL, HP-OUTLINE-15,
D18	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D19	28381/132	DIODE VARI-CAP BB809... 28V 20mA 29pF @ 3V, CAPAC RATIO 5.0 MIN, AXIAL, DO-34, (TAPED).
D22	28371/401	DIODE ZENER BZX79-C5V1... 500mW 5.1V 5% 250mA AXIAL, DO-35, (TAPED).
D23	28383/903	DIODE DUAL RECTIFIER BAV99... 70V 100mA 1.1Vf @ 50mA, IN SERIES, MARKING CODE A7, SURFACE MOUNTED,
D24	28371/401	DIODE ZENER BZX79-C5V1... 500mW 5.1V 5% 250mA AXIAL, DO-35, (TAPED).
IC1	28461/371	IC ANALOGUE WIDEBAND-AMPLIFIER OM350... SINGLE, 12V 40MHz-860MHz, 18dB, VHF/UHF, HYBRID, 5 PIN,
IC2	28462/022	IC DIGITAL DIVIDER SP8604BCM... DIVIDE BY 2, 300MHZ, ECL, 8 PIN, TO-5.
IC3	28461/317	IC ANALOGUE OPERATIONAL AMP NE531 HIGH SLEW RATE, LINEAR, 8 PIN, DUAL-IN-LINE.
IC4	28461/351	IC ANALOGUE WIDEBAND-AMPLIFIER OM345... SINGLE, 12V 400KHz-1GHz, 12dB, VHF/UHF, HYBRID, 5 PIN,
IC5	28461/351	IC ANALOGUE WIDEBAND-AMPLIFIER OM345... SINGLE, 12V 400KHz-1GHz, 12dB, VHF/UHF, HYBRID, 5 PIN,
IC6	28531/002	RF-MIXER DOUBLE-BALANCED, DIODE RING, SBL-1.. 1-500MHz, 50R 1 dBm RF-1dB COMPRESS, 5.5 dB LOSS,
IC7	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC8	28461/406	IC ANALOGUE WIDEBAND-AMPLIFIER OM370L.. SINGLE, 12V 400KHz-1GHz, 28dB, VHF/UHF, HYBRID, 9 PIN,
IC9	28466/406	IC DIGITAL EXCLUSIVE-OR 74LS86... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC10	28464/034	IC DIGITAL DIVIDER SP8789DP... DIVIDE BY 20/21, 225MHz, TWO MODULUS, ECL, 8 PIN, DUAL-IN-LINE.
IC11	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
L5	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L6	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L7	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L15	23642/333	INDUCTOR FIXED 470uH +/- 10% SCREENED, MOULDED-EPOXY, 310mA 3R3 MAX, 90 Q @ 0.79 MHz, 3
L16	23642/552	INDUCTOR FIXED 3.3uH +/- 10% COATED-LACQUER, MINIATURE, 350mA 1R6 MAX, 32 Q @ 7.9 MHz, 115 MHz
L19	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.

LF synthesizer and output amplifier board AA4/1 (contd.)

Ref.	number	Description
L20	23642/558	INDUCTOR FIXED 33uH +/- 10% COATED-LACQUER, MINIATURE, 210mA 5R2 MAX, 55 Q @ 2.5 MHz, 20 MHz
L21	44190/036	WOUND-PART INDUCTOR, BEAD-CORE, 5 TURNS, UNMOUNTED.
PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLB	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24331/998	RESISTOR FIXED CARBON-COMPOSITION 120R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R2	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24331/998	RESISTOR FIXED CARBON-COMPOSITION 120R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R5	24331/976	RESISTOR FIXED CARBON-COMPOSITION 220R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R6	24772/067	RESISTOR FIXED METAL-FILM 560R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/082	RESISTOR FIXED METAL-FILM 2K4 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24331/976	RESISTOR FIXED CARBON-COMPOSITION 220R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R11	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED)
R13	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/077	RESISTOR FIXED METAL-FILM 1K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24331/998	RESISTOR FIXED CARBON-COMPOSITION 120R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R18	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24331/996	RESISTOR FIXED CARBON-COMPOSITION 82R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R21	24331/979	RESISTOR FIXED CARBON-COMPOSITION 68R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R22	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

LF synthesizer and output amplifier board AA4/1 (contd.)

R23	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R30	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24331/990	RESISTOR FIXED CARBON-COMPOSITION 150R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R32	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24331/990	RESISTOR FIXED CARBON-COMPOSITION 150R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R36(SIC)	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R37	24331/978	RESISTOR FIXED CARBON-COMPOSITION 33R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R38	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R40	24331/967	RESISTOR FIXED CARBON-COMPOSITION 1K +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R41	24331/984	RESISTOR FIXED CARBON-COMPOSITION 680R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R42	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24331/947	RESISTOR FIXED CARBON-COMPOSITION 1K8 +/- 5% 125mW 150V AXIAL., (LOOSE OR TAPED).
R44	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R45(SIC)	24331/975	RESISTOR FIXED CARBON-COMPOSITION 47R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R46	24762/558	RESISTOR FIXED METAL-FILM 50R +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R47	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R48	24331/964	RESISTOR FIXED CARBON-COMPOSITION 470R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R50	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24331/947	RESISTOR FIXED CARBON-COMPOSITION 1K8 +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).

LF synthesizer and output amplifier board AA4/1 (contd.)

Ref.	number	Description
R52	24331/974	RESISTOR FIXED CARBON-COMPOSITION 10R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R53	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R54	24762/582	,RESISTOR FIXED METAL-FILM 96R3 +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R55	24762/572	RESISTOR FIXED METAL-FILM 71R2 +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R56	24762/582	,RESISTOR FIXED METAL-FILM 96R3 +/- 1% 250mW 250V 100 ppm/DEG.C, NON-INDUCTIVE, AXIAL CUT, AXIAL,
R57	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R58	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R59	24331/963	RESISTOR FIXED CARBON-COMPOSITION 390R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R60	24331/984	RESISTOR FIXED CARBON-COMPOSITION 680R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R61	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R62	24772/059	RESISTOR FIXED METAL-FILM 270R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R63	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R64	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R70	24772/077	RESISTOR FIXED METAL-FILM 1K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R71	24772/125	RESISTOR FIXED METAL-FILM 150K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R74	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R75	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
RLA	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
SK1	23435/990	CONNECTOR SHORTING, SOCKET, 2 WAY, FOR 0.64mm SQ PINS, 2.54mm PITCH, 9.6mm HIGH, FREE MOUNTING,
TR1	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR2	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR3	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR4	28452/167	TRANSISTOR NPN BIPOLAR BFR90.... 15V 5GHz 180mW 25mA 40hFE @ 14mA, SURFACE MOUNTED, SOT-37.

Cir. Ref.	MI part number	Description

LF synthesizer and output amplifier board AA4/1 (contd.)

TR5	28452/167	TRANSISTOR NPN BIPOLAR BFR90.... 15V 5GHz 180mW 25mA 40hFE @ 14mA, SURFACE MOUNTED, SOT-37.
TR6	28452/771	TRANSISTOR NPN BIPOLAR BC209C.... 20V 150MHz 200mW 100mA 420hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR7	28433/487	TRANSISTOR PNP BIPOLAR BCY72.... 25V 200MHz 350mW 200mA 50hFE @ 10mA, TO-18.
TR8	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).

Motherboard AB1/1

When ordering, prefix circuit reference with AB1/1.

Cir. Ref.	MI part number	Description
	44829/523	Complete unit
C3	26421/142	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C4	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C5	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C6	26421/143	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C8	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C9	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C10	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C11	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C12	26421/127	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C13	26421/142	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C14	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C15	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C16	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C17	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C18	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C19	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C20	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED)
C21	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C22	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C23	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C24	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C25	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C26	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Motherboard AB1/1 (contd.)

D1	28371/401	DIODE ZENER BZX79-C5V1... 500mW 5.1V 5% 250mA AXIAL, DO-35, (TAPED).
D2	28371/401	DIODE ZENER BZX79-C5V1... 500mW 5.1V 5% 250mA AXIAL, DO-35, (TAPED).
D3	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D4	28371/371	DIODE ZENER BZX79-C4V7... 500mW 4.7V 5% 250mA AXIAL, DO-35, (TAPED).
IC1	28465/027	IC DIGITAL DECODER/DEMULTIPLEX 74LS138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC2	28462/615	IC DIGITAL FLIP-FLOP/D-TYPE 74LS273... OCTAL, POS EDGE TRIGGER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC3	28466/348	IC DIGITAL NAND-GATE 74LS30... 8 INPUT, SINGLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC4	28469/182	IC DIGITAL BUFFER/LINE-DRIVER 74LS244.. 1 INPUT, OCTAL, NON-INVERTING, TRI-STATE BUS,
IC5	28466/346	IC DIGITAL NAND-GATE 74LS03.. 2 INPUT, QUAD, OPEN-COLLECTOR, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC6	28461/348	IC ANALOGUE OPERATIONAL AMP TL072CP... DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC7	28469/101	IC DIGITAL BUFFER/LINE-DRIVER 74LS126.. QUAD, BUS, TRI-STATE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC8	28462/615	IC DIGITAL FLIP-FLOP/D-TYPE 74LS273... OCTAL, POS EDGE TRIGGER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC9	28462/612	IC DIGITAL FLIP-FLOP/D-TYPE 74LS174.. 6 INPUT, 6 BIT, HEX, POS EDGE TRIGGER & MASTER RESET,
IC11	28465/027	IC DIGITAL DECODER/DEMULTIPLEX 74LS138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC12	28469/184	IC DIGITAL BUFFER/LINE-DRIVER 74LS125A... QUAD, TRI-STATE, LOW ENABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC13	28461/372	IC ANALOGUE AUDIO-AMPLIFIER LM380N.. 2.5W, LINEAR, MONOLITHIC, 14 PIN, DUAL-IN-LINE.
IC14	28462/619	IC DIGITAL FLIP-FLOP/D-TYPE 74LS377... OCTAL, POS EDGE TRIGGER, CLOCK ENABLE, TTL-SCHOTTKY-L/PWR, 20
IC15	28462/619	IC DIGITAL FLIP-FLOP/D-TYPE 74LS377... OCTAL, POS EDGE TRIGGER, CLOCK ENABLE, TTL-SCHOTTKY-L/PWR, 20
IC16	28469/112	IC DIGITAL BUFFER/LINE-DRIVER 7416.... HEX, OPEN-COLLECTOR, 15V, INVERTING, TTL, 14 PIN,
IC17	28469/112	IC DIGITAL BUFFER/LINE-DRIVER 7416.... HEX, OPEN-COLLECTOR, 15V, INVERTING, TTL, 14 PIN,
IC18	28466/345	IC DIGITAL NAND-GATE 74LS00 .. 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC19	28461/962	IC ANALOGUE DTMF-RECEIVER 8870... LOW-POWER, CMOS, 18 PIN, DUAL-IN-LINE.
IC20	28461/348	IC ANALOGUE OPERATIONAL AMP TL072CP . DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC21	28462/615	IC DIGITAL FLIP-FLOP/D-TYPE 74LS273... OCTAL, POS EDGE TRIGGER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC22	28464/014	IC DIGITAL COUNTER 74LS90.. 4 BIT, DECADE, DIVIDE BY 2,5 OR 10, TTL-SCHOTTKY-L/PWR, 14 PIN,

Motherboard AB1/1 (contd.)

Cir. Ref.	MI part number	Description
PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLB	23444/334	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, PCB-MOUNTING, NICKEL PLATED BODY.
PLC	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLD	23435/913	CONNECTOR MULTIWAY, PCB HEADER, 9 WAY, STRAIGHT, 5.08mm PITCH, TIN PLATED PINS, 1.14mm SQUARE.
PLE	23435/913	CONNECTOR MULTIWAY, PCB HEADER, 9 WAY, STRAIGHT, 5.08mm PITCH, TIN PLATED PINS, 1.14mm SQUARE.
PLF	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLG	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLH	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLJ	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLK	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLM	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLP	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLR	23444/334	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, PCB-MOUNTING, NICKEL PLATED BODY.
PLS	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLT	23444/334	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, PCB-MOUNTING, NICKEL PLATED BODY.
PLU	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLW	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLX	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLY	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLZ	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLAA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLAB	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24681/654	RESISTOR NETWORK BUSSED, THICK-FILM, 1K 2% 1W 50V 100 ppm/DEG.C, LOW-PROFILE, 10 PIN,
R2	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Motherboard AB1/1 (contd.)

R5	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24321/885	RESISTOR FIXED METAL-GLAZE 10M +/- 5% 250mW 1.6KV 200 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/091	RESISTOR FIXED METAL-FILM 5K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/091	RESISTOR FIXED METAL-FILM 5K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/011	RESISTOR FIXED METAL-FILM 2R7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED)
R30	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Motherboard AB1/1 (contd.)

R35	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/132	RESISTOR FIXED METAL-FILM 300K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R40	24772/132	RESISTOR FIXED METAL-FILM 300K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24772/139	RESISTOR FIXED METAL-FILM 680K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/131	RESISTOR FIXED METAL-FILM 270K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24772/127	RESISTOR FIXED METAL-FILM 180K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R48	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R49	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
SKA	23435/827	CONNECTOR EDGE, DOUBLE-SIDED, 64 WAY, 3.81mm PITCH, OPEN-ENDED, PCB MOUNTING, TAILS 3.5mm MAX
SKB	23435/827	CONNECTOR EDGE, DOUBLE-SIDED, 64 WAY, 3.81mm PITCH, OPEN-ENDED, PCB MOUNTING, TAILS 3 5mm MAX
SKC	23435/827	CONNECTOR EDGE, DOUBLE-SIDED, 64 WAY, 3.81mm PITCH, OPEN-ENDED, PCB MOUNTING, TAILS 3.5mm MAX
SKD	23435/827	CONNECTOR EDGE, DOUBLE-SIDED, 64 WAY, 3.81mm PITCH, OPEN-ENDED, PCB MOUNTING, TAILS 3.5mm MAX
SKE	23435/827	CONNECTOR EDGE, DOUBLE-SIDED, 64 WAY, 3.81mm PITCH, OPEN-ENDED, PCB MOUNTING, TAILS 3.5mm MAX
TR1	28435/868	TRANSISTOR PNP BIPOLAR 2N2905A.... 60V 200MHz 600mW 600mA 100hFE @ 150mA, TO-39.
TR2	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR3	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR4	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).

Cir. Ref.	MI part number	Description

Motherboard AB1/1 (contd.)

TR5	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR7	28459/046	TRANSISTOR N-CHANNEL-ENHANCE MOSFET VN10KM.... 60V 1W 500mA TO-237.
X1	28312/129	CRYSTAL 3.57954 MHz +/- 30 ppm, @ 25 DEG.C, 20pF PARALLEL RESONANCE, 200R ESR MAX, TEMP TOL

Digital scope board AB2/2

When ordering, prefix circuit reference with

Cir. Ref.	... part number	Description
	44829/635	Complete unit
C1	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C2	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C3	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C4	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C5	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C6	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C7	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C8	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C9	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C10	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C11	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C12	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C13	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C14	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C15	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C16	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C17	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C18	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C19	26343/068	CAPACITOR FIXED CERAMIC 100pF +/-5% 500V N750 SINGLELAYER, RADIAL, 5mm PWP, (LOOSE).
D1	28349/013	DIODE SCHOTTKY BAT42... 400mW 30V 100mA 0.5Vf @ 50mA, FAST-SWITCHING, AXIAL, DO-35, (TAPED).
D2	28349/013	DIODE SCHOTTKY BAT42... 400mW 30V 100mA 0.5Vf @ 50mA, FAST-SWITCHING, AXIAL, DO-35, (TAPED).

Cir. Ref.	MI part number	Description

Digital scope board AB2/2 (contd.)

Cir. Ref.	MI part number	Description
IC1	28461/935	IC ANALOGUE A/D CONVERTER ADC0820CCN... 8 BIT, HIGH SPEED 2uS, CMOS, 20 PIN, DUAL-IN-LINE.
IC2	28462/615	IC DIGITAL FLIP-FLOP/D-TYPE 74LS273... OCTAL, POS EDGE TRIGGER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC3	28469/371	IC DIGITAL COMPARATOR 74LS85.. 4 BIT, MAGNITUDE, TTL-SCHOTTKY-L/PWR, 16 PIN, DUAL-IN-LINE.
IC4	28469/371	IC DIGITAL COMPARATOR 74LS85.. 4 BIT, MAGNITUDE, TTL-SCHOTTKY-L/PWR, 16 PIN, DUAL-IN-LINE.
IC5	28469/371	IC DIGITAL COMPARATOR 74LS85.. 4 BIT, MAGNITUDE, TTL-SCHOTTKY-L/PWR, 16 PIN, DUAL-IN-LINE.
IC6	28469/371	IC DIGITAL COMPARATOR 74LS85.. 4 BIT, MAGNITUDE, TTL-SCHOTTKY-L/PWR, 16 PIN, DUAL-IN-LINE.
IC7	28462/615	IC DIGITAL FLIP-FLOP/D-TYPE 74LS273... OCTAL, POS EDGE TRIGGER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC8	28462/615	IC DIGITAL FLIP-FLOP/D-TYPE 74LS273... OCTAL, POS EDGE TRIGGER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC10	28469/712	IC DIGITAL MULTIPLEXER 74LS257... 2 INPUT, QUAD, TRI-STATE, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC11	28469/712	IC DIGITAL MULTIPLEXER 74LS257... 2 INPUT, QUAD, TRI-STATE, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC12	28469/307	IC MICRO STATIC-RAM, 2K x 8 BIT, HM6116P-4... 200nS, CMOS, 24 PIN, DUAL-IN-LINE.
IC13	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC14	28469/720	IC DIGITAL MULTIPLEXER 74LS158... 2 INPUT, QUAD, INVERTED OUTPUTS, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC15	28469/720	IC DIGITAL MULTIPLEXER 74LS158... 2 INPUT, QUAD, INVERTED OUTPUTS, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC16	28469/720	IC DIGITAL MULTIPLEXER 74LS158... 2 INPUT, QUAD, INVERTED OUTPUTS, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC17	28464/130	IC DIGITAL COUNTER 74LS393.. 4 BIT, DUAL, BINARY RIPPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC18	28464/130	IC DIGITAL COUNTER 74LS393.. 4 BIT, DUAL, BINARY RIPPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC19	28464/130	IC DIGITAL COUNTER 74LS393.. 4 BIT, DUAL, BINARY RIPPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC21	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC23	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC24	28466/214	IC DIGITAL NOR-GATE 74LS02.. 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC25	28469/171	IC DIGITAL INVERTER 74LS04.. HEX, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC26	28464/127	IC DIGITAL COUNTER 74LS390.. 4 BIT, DUAL, DECADE RIPPLE, TTL-SCHOTTKY-L/PWR, 16 PIN, DUAL-IN-LINE.
IC27	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC28	28466/351	IC DIGITAL NAND-GATE 74LS10... 3 INPUT, TRIPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC31	28468/304	IC ANALOGUE TIMER NE555.. SINGLE, 16V ASTABLE & MONOSTABLE MODES, MONOLITHIC, 8 PIN, DUAL-IN-LINE.
IC34	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC35	28464/116	IC DIGITAL COUNTER 74LS197.. 4 BIT, BINARY, PRESETTABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,

Digital scope board AB2/2 (contd.)

Ref.	number	Description
IC36	28464/116	IC DIGITAL COUNTER 74LS197.. 4 BIT, BINARY, PRESETTABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC37	28464/116	IC DIGITAL COUNTER 74LS197.. 4 BIT, BINARY, PRESETTABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC38	28464/116	IC DIGITAL COUNTER 74LS197.. 4 BIT, BINARY, PRESETTABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC39	28464/116	IC DIGITAL COUNTER 74LS197.. 4 BIT, BINARY, PRESETTABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC40	28464/116	IC DIGITAL COUNTER 74LS197.. 4 BIT, BINARY, PRESETTABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC41	28464/116	IC DIGITAL COUNTER 74LS197.. 4 BIT, BINARY, PRESETTABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC43	28464/116	IC DIGITAL COUNTER 74LS197.. 4 BIT, BINARY, PRESETTABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC44	28469/171	IC DIGITAL INVERTER 74LS04.. HEX, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC45	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC46	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC47	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC48	28465/029	IC DIGITAL DECODER/DEMULTIPLEX 74LS139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC49	28461/741	IC ANALOGUE VOLTAGE-REGULATOR LM317LZ... 37V 100mA POSITIVE ADJUSTABLE, LINEAR, MONOLITHIC, 3 PIN,
R1	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/125	RESISTOR FIXED METAL-FILM 150K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/063	RESISTOR FIXED METAL-FILM 390R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/079	RESISTOR FIXED METAL-FILM 1K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Digital scope board AB2/2 (contd.)

R14	25711/609	RESISTOR VARIABLE CERMET LINEAR, 2K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB, 0.375in
X1	35901/604	TERMINAL PRINTED BOARD TAG, CLOSED-END, 6.3mm x 3mm TAG, 4mm LONG TAIL, BRASS, 0.6mm THK, HOT TIN
X2	31739/395	LABEL-MARKED POLYESTER, MARKED WITH 2 HAND WARNING TRIANGLES, BLACK ON YELLOW, SELF ADHESIVE, 20mm
X3	31829/635	BOARD DETAIL PLATED-THROUGH, 2955A, AB2/2, GOLD PL, 1.6 mm THK, 1 oz CU, GLASS/EPOXY, GRADE FR4,
X4	21127/922	PIN SPRING, C-TYPE, 0.062in DIA, 0.25in LONG, STEEL, CORROSION RESISTANT.
X5	37590/920	MOULDED-PART POLYACETAL, PCB EJECTOR, BLACK, 24mm LONG, 6.6mm WIDE, 9.85mm HIGH.

Cir. Ref.	MI part number	Description

VDU board AB3/2

When ordering, prefix circuit reference with AB3/2.

Cir. Ref.	MI part number	Description
	44829/636	Complete unit
C1	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C3	26421/104	CAPACITOR FIXED ALUMINIUM 470nF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C4	26421/104	CAPACITOR FIXED ALUMINIUM 470nF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C5	26421/104	CAPACITOR FIXED ALUMINIUM 470nF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C6	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C7	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C8	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C9	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C10	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C11	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C12	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C13	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C15	26486/209	CAPACITOR FIXED TANTALUM 1uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C16	26343/436	CAPACITOR FIXED CERAMIC 270pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C17	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C18	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C19	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C20	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C21	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C22	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C23	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
D1	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D2	28336/676	DIODE GENERAL-PURPOSE 1N4148.. 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).

Cir. Ref.	MI part number	Description

VDU board AB3/2 (contd.)

D3	28371/417	DIODE ZENER BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D4	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D5	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
IC14	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC16	28464/162	IC DIGITAL COUNTER 74LS393.. 4 BIT, DUAL, BINARY RIPPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC17	28464/130	IC DIGITAL COUNTER 74LS393.. 4 BIT, DUAL, BINARY RIPPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC18	28464/130	IC DIGITAL COUNTER 74LS393.. 4 BIT, DUAL, BINARY RIPPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC19	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC20	28466/009	IC DIGITAL AND-GATE 4081... 2 INPUT, QUAD, CMOS, 14 PIN, DUAL-IN-LINE.
IC22	28469/171	IC DIGITAL INVERTER 74LS04.. HEX, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC23	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC24	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC25	28466/348	IC DIGITAL NAND-GATE 74LS30... 8 INPUT, SINGLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC26	28466/351	IC DIGITAL NAND-GATE 74LS10... 3 INPUT, TRIPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC27	28469/194	IC DIGITAL BUFFER 74LS365A... HEX, TRI-STATE, NON-INVERTING, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC28	28464/130	IC DIGITAL COUNTER 74LS393.. 4 BIT, DUAL, BINARY RIPPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC29	28469/707	IC DIGITAL MULTIPLEXER 74LS157.. 2 INPUT, 4 BIT, QUAD, NON-INVERTING, DATA SELECTOR,
IC30	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC32	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC34	28469/350	IC MICRO STATIC-RAM, 2K x 8 BIT, HM6116, 200nS, CMOS, 24 PIN, DUAL-IN-LINE.
IC36	28467/530	IC DIGITAL SHIFT-REGISTER 74LS165... 8 BIT, SERIAL/PARALLEL-IN SERIAL-OUT, TTL-SCHOTTKY-L/PWR,
IC37	28469/194	IC DIGITAL BUFFER 74LS365A... HEX, TRI-STATE, NON-INVERTING, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC38	28466/351	IC DIGITAL NAND-GATE 74LS10... 3 INPUT, TRIPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC39	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC40	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC42	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,

Cir. Ref.	MI part number	Description

VDU board AB3/2 (contd.)

Cir. Ref.	MI part number	Description
IC43	28466/406	IC DIGITAL EXCLUSIVE-OR 74LS86... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC44	28469/171	IC DIGITAL INVERTER 74LS04.. HEX, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC45	28462/618	IC DIGITAL FLIP-FLOP/D-TYPE 74LS374.. 1 INPUT, OCTAL, NON-INVERTING, POS TRIGGER, TRI-STATE,
IC46	28462/618	IC DIGITAL FLIP-FLOP/D-TYPE 74LS374.. 1 INPUT, OCTAL, NON-INVERTING, POS TRIGGER, TRI-STATE,
IC47	28462/618	IC DIGITAL FLIP-FLOP/D-TYPE 74LS374.. 1 INPUT, OCTAL, NON-INVERTING, POS TRIGGER, TRI-STATE,
IC48	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC49	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
L1	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
R1	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/095	RESISTOR FIXED METAL-FILM 8K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

VDU board AB3/2 (contd.)

R26	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
SK1	28488/044	SOCKET INTEGRATED-CIRCUIT, 24 WAY, DUAL-IN-LINE, TURNED PIN, COLLET, LOW-PROFILE, 15.24mm ROW
X1	35901/604	TERMINAL PRINTED BOARD TAG, CLOSED-END, 6.3mm x 3mm TAG, 4mm LONG TAIL, BRASS, 0.6mm THK, HOT TIN
X2	31829/636	BOARD DETAIL PLATED-THROUGH, 2955A, AB3/2, GOLD PL, 1.6 mm THK, 1 oz CU, GLASS/EPOXY, GRADE FR4,
X3	21127/922	PIN SPRING, C-TYPE, 0.062in DIA, 0.25in LONG, STEEL, CORROSION RESISTANT.
X4	37590/920	MOULDED-PART POLYACETAL, PCB EJECTOR, BLACK, 24mm LONG, 6.6mm WIDE, 9.85mm HIGH.
X5	31739/395	LABEL-MARKED POLYESTER, MARKED WITH 2 HAND WARNING TRIANGLES, BLACK ON YELLOW, SELF ADHESIVE, 20mm

Microprocessor board AB4/2

When ordering, prefix circuit reference with AB4/2.

Ref.	Part number	Description
	44829/902	Complete unit
C1	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C2	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C3	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C4	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C5	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C6	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C7	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C8	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C9	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C10	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C12	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C13	26415/805	CAPACITOR FIXED ALUMINIUM 22uF -20/+100% 25V ELECTROLYTIC, AXIAL, (TAPED).
C14	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C15	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C16	26415/805	CAPACITOR FIXED ALUMINIUM 22uF -20/+100% 25V ELECTROLYTIC, AXIAL, (TAPED).
C17	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C18	26582/427	CAPACITOR FIXED POLYESTER 470nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C22	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C23	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C24	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C25	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C26	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C27	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C28	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C29	26582/297	CAPACITOR FIXED POLYCARBONATE 10nF +/-2% 400V 125 ppm/DEG.C, RADIAL, 10.2mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Microprocessor board AB4/2 (contd.)

C30	26421/104	CAPACITOR FIXED ALUMINIUM 470nF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C31	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C33	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C34	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C35	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C36	26421/108	CAPACITOR FIXED ALUMINIUM 4.7uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C40	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C41	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C42	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C43	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C44	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C45	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C46	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C47	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C48	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C49	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C50	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C51	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C52	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C53	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C54	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C55	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C56	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C57	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C58	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C59	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C60	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C61	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Microprocessor board AB4/2 (contd.)

C62	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C63	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C64	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
D1	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D2	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D3	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D4	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D5	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D6	28461/768	IC ANALOGUE VOLTAGE-REFERENCE... LM336 SINGLE, 5V 5mA 2% 300 uW, 3 PIN,TO-92.
D7	28355/170	DIODE RECTIFIER, SCHOTTKY, 1N5819... 40V 1A 0.6Vf @ 1A, AXIAL, DO-41, (TAPED).
D8	28349/013	DIODE SMALL-SIGNAL, SCHOTTKY, BAT42... 400mW 30V 100mA 5pF 0.5Vf @ 50mA, 5nS, AXIAL, DO-35,
D9	28371/417	DIODE ZENER, BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D11	28349/013	DIODE SMALL-SIGNAL, SCHOTTKY, BAT42... 400mW 30V 100mA 5pF 0.5Vf @ 50mA, 5nS, AXIAL, DO-35,
D12	28349/013	DIODE SMALL-SIGNAL, SCHOTTKY, BAT42... 400mW 30V 100mA 5pF 0.5Vf @ 50mA, 5nS, AXIAL, DO-35,
D13	28349/013	DIODE SMALL-SIGNAL, SCHOTTKY, BAT42... 400mW 30V 100mA 5pF 0.5Vf @ 50mA, 5nS, AXIAL, DO-35,
D14	28349/013	DIODE SMALL-SIGNAL, SCHOTTKY, BAT42... 400mW 30V 100mA 5pF 0.5Vf @ 50mA, 5nS, AXIAL, DO-35,
D15	28349/013	DIODE SMALL-SIGNAL, SCHOTTKY, BAT42... 400mW 30V 100mA 5pF 0.5Vf @ 50mA, 5nS, AXIAL, DO-35,
D17	28349/013	DIODE SMALL-SIGNAL, SCHOTTKY, BAT42... 400mW 30V 100mA 5pF 0 5Vf @ 50mA, 5nS, AXIAL, DO-35,
IC1	28469/415	IC MICRO PROCESSOR, 8 BIT, P8085A-2... 5MHz, N-CHANNEL, NMOS, 40 PIN, DUAL-IN-LINE.
IC2	28462/618	IC DIGITAL FLIP-FLOP/D-TYPE 74LS374.. 1 INPUT, OCTAL, NON-INVERTING, POS EDGE TRIGGER, TRI-STATE,
IC3	28461/945	IC ANALOGUE A/D CONVERTER ADC0809CCN... BUS-COMPATIBLE 8 CHANNEL MULTIPLEXER, CMOS, 28
IC4	28469/416	IC MICRO CONTROLLER, AM9513... SYSTEM TIMING, MOS/LSI, 40 PIN, DUAL-IN-LINE.
IC5	28469/491	IC DIGITAL PROG-ARRAY-LOGIC EP310-2.. 18 INPUT, 8 BIT, SINGLE, ERASABLE, 35nS, 8 MACROCELLS,
IC6	28462/614	IC DIGITAL FLIP-FLOP/D-TYPE 74LS175... QUAD, POS EDGE TRIGGER, PLUS CLEAR, TTL-SCHOTTKY-L/PWR, 16

Cir. Ref.	MI part number	Description
		Microprocessor board AB4/2 (contd.)
IC7	28469/188	IC DIGITAL TRANSCEIVER 74LS245.. OCTAL, TRI-STATE, NON-INVERTING, BI-DIRECTIONAL, TTL-SCHOTTKY-L/PWR,
IC8	28465/027	IC DIGITAL DECODER/DEMULTIPLEX 74LS138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC11	28462/618	IC DIGITAL FLIP-FLOP/D-TYPE 74LS374.. 1 INPUT, OCTAL, NON-INVERTING, POS EDGE TRIGGER, TRI-STATE,
IC12	28462/615	IC DIGITAL FLIP-FLOP/D-TYPE 74LS273... OCTAL, POS EDGE TRIGGER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC14	28467/079	IC MICRO STATIC-RAM, 512 x 8 BIT, X2004... NON-VOLATILE, NMOS, 28 PIN, DUAL-IN-LINE.
IC15	28469/188	IC DIGITAL TRANSCEIVER 74LS245.. OCTAL, TRI-STATE, NON-INVERTING, BI-DIRECTIONAL, TTL-SCHOTTKY-L/PWR,
IC16	28469/323	IC MICRO STATIC-RAM, 32K x 8 BIT, 43256-12.. 120nS ACCESS TIME, +5V, NO CLOCK OR TIMING STROBE
IC17	28466/108	IC DIGITAL OR-GATE 74LS32.. 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC18	28465/029	IC DIGITAL DECODER/DEMULTIPLEX 74LS139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC19	28462/615	IC DIGITAL FLIP-FLOP/D-TYPE 74LS273... OCTAL, POS EDGE TRIGGER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC20	28468/312	IC ANALOGUE TIMER NE556.. DUAL, 16V ASTABLE & MONOSTABLE MODES, MONOLITHIC, 14 PIN,
IC21	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC22	28466/454	IC DIGITAL AND/OR-GATE 74LS51.... 2 INPUT, DUAL, 2 WIDE/3 INPUT - 2 WIDE/2 INPUT, TTL-SCHOTTKY-L/PWR,
IC23	28464/127	IC DIGITAL COUNTER 74LS390.. 4 BIT, DUAL, DECADE RIPPLE, TTL-SCHOTTKY-L/PWR, 16 PIN, DUAL-IN-LINE.
IC24	28469/176	IC DIGITAL INVERTER 74LS14.. HEX, SCHMITT-TRIGGER OPERATION, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC25	28469/009	IC DIGITAL INVERTER 74HCT14.. HEX, SCHMITT-TRIGGER OPERATION, CMOS-H/SPEED+TTL, 14 PIN, DUAL-IN-LINE.
IC26	28469/182	IC DIGITAL BUFFER/LINE-DRIVER 74LS244.. 1 INPUT, OCTAL, NON-INVERTING, TRI-STATE BUS,
IC27	28469/715	IC DIGITAL MULTIPLEXER 74LS151.. 8 INPUT, SINGLE, 8 TO 1, TRUE & COMPLEMENTARY OUTPUTS,
IC28	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC29	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC30	28461/348	IC ANALOGUE OPERATIONAL AMP TL072CP... DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC31	28469/729	IC DIGITAL MULTIPLEXER 74HC157.. 2 INPUT, 4 BIT, QUAD, NON-INVERTING, DATA SELECTOR, CMOS-H/SPEED,
IC32	28461/939	IC ANALOGUE RMS/DC CONVERTER AD536AJH... LINEAR, MONOLITHIC, 10 PIN, TO-100.
IC33	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC34	28466/214	IC DIGITAL NOR-GATE 74LS02.. 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC36	28468/310	IC DIGITAL FLIP-FLOP/MONOSTABLE 74LS122... RETRIGGERABLE, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC37	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
	44533/399	IC PROGRAMMED PAL, SET OF 1, 2955B, ADDRESS

Cir. Ref.	MI part number	Description

Microprocessor board AB4/2 (contd.)

Cir. Ref.	MI part number	Description
LK1	23435/990	CONNECTOR SHORTING, SOCKET, 2 WAY, FOR 0.64mm SQ PINS,_2.54mm_PITCH,_9.6mm_HIGH,_FREE_MOUNTING,_
LK2	23435/990	CONNECTOR SHORTING, SOCKET, 2 WAY, FOR 0.64mm SQ PINS,_2.54mm_PITCH,_9.6mm_HIGH,_FREE_MOUNTING,_
R1	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG C, AXIAL, (TAPED).
R17	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24773/309	RESISTOR FIXED METAL-FILM 33K +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24773/301	RESISTOR FIXED METAL-FILM 15K +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R30	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Microprocessor board AB4/2 (contd.)

R31	24772/116	RESISTOR FIXED METAL-FILM 62K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24773/265	RESISTOR FIXED METAL-FILM 470R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/125	RESISTOR FIXED METAL-FILM 150K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/077	RESISTOR FIXED METAL-FILM 1K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24772/060	RESISTOR FIXED METAL-FILM 300R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R46	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/060	RESISTOR FIXED METAL-FILM 300R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R48	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R50	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R53	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R54	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R55	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG C, AXIAL, (TAPED).
R56	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R57	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R58	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R59	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
TR1	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).

Cir. Ref.	MI part number	Description

Microprocessor board AB4/2 (contd.)

TR2	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR3	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR4	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2

When ordering, prefix circuit reference with AB5/2.

Cir. Ref.	MI part number	Description
	44829/770	Complete unit
C102	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C103	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C104	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C105	26343/438	CAPACITOR FIXED CERAMIC 120pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C106	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C107	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C108	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C109	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C110	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C111	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C112	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C113	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C114	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C115	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C116	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C117	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C118	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C119	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C121	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C122	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C123	26538/918	CAPACITOR FIXED POLYSTYRENE 4.7nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C124	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C125	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C126	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C127	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

C128	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C129	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C130	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C131	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C132	26383/592	CAPACITOR FIXED CERAMIC 1.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C133	26421/114	CAPACITOR FIXED ALUMINIUM 22uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C134	26421/114	CAPACITOR FIXED ALUMINIUM 22uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C135	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C136	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C137	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C138	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C139	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C140	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C141	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C142	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C143	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C144	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C145	26582/408	CAPACITOR FIXED POLYESTER 330nF +/-10% 63V RADIAL, 10.2mm PWP, (LOOSE).
C146	26582/408	CAPACITOR FIXED POLYESTER 330nF +/-10% 63V RADIAL, 10 2mm PWP, (LOOSE).
C147	26343/444	CAPACITOR FIXED CERAMIC 56pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C148	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C200	26582/208	CAPACITOR FIXED POLYESTER 100nF +/-10% 250V RADIAL, 10.2mm PWP, (LOOSE).
C201	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C202	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C203	26343/490	CAPACITOR FIXED CERAMIC 1.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C204	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C205	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C206	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

C207	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C208	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C300	26538/867	CAPACITOR FIXED POLYSTYRENE 22nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C301	26538/867	CAPACITOR FIXED POLYSTYRENE 22nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C302	26538/867	CAPACITOR FIXED POLYSTYRENE 22nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C303	26538/867	CAPACITOR FIXED POLYSTYRENE 22nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C304	26538/867	CAPACITOR FIXED POLYSTYRENE 22nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C305	26538/867	CAPACITOR FIXED POLYSTYRENE 22nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C306	26538/926	CAPACITOR FIXED POLYSTYRENE 10nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C307	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C308	26538/926	CAPACITOR FIXED POLYSTYRENE 10nF +/-1% 63V 125 ppm/DEG C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C309	26538/912	CAPACITOR FIXED POLYSTYRENE 2.7nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C310	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C311	26538/918	CAPACITOR FIXED POLYSTYRENE 4.7nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C312	26538/918	CAPACITOR FIXED POLYSTYRENE 4.7nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C313	26538/918	CAPACITOR FIXED POLYSTYRENE 4.7nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C314	26538/918	CAPACITOR FIXED POLYSTYRENE 4.7nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C315	26582/299	CAPACITOR FIXED POLYCARBONATE 100nF +/-2% 100V 125 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE).
C316	26538/910	CAPACITOR FIXED POLYSTYRENE 2.2nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5 08mm PWP, SQUARE, WIRES ON
C317	26582/299	CAPACITOR FIXED POLYCARBONATE 100nF +/-2% 100V 125 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE).
C318	26538/932	CAPACITOR FIXED POLYSTYRENE 22nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C319	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C320	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C321	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C322	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C323	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C324	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C325	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

Cir. Ref.	MI part number	Description
C326	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C327	26343/431	CAPACITOR FIXED CERAMIC 82pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
D100	28371/371	DIODE ZENER BZX79-C4V7... 500mW 4.7V 5% 250mA AXIAL, DO-35, (TAPED).
D101	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D102	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D103	28371/371	DIODE ZENER BZX79-C4V7... 500mW 4.7V 5% 250mA AXIAL, DO-35, (TAPED).
D200	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D300	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
IC100	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC101	28461/348	IC ANALOGUE OPERATIONAL AMP TL072CP... DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC102	28461/695	IC ANALOGUE COMPARATOR LM311.. SINGLE, 15V 500mW, LINEAR, MONOLITHIC, 8 PIN, DUAL-IN-LINE.
IC103	28468/402	IC DIGITAL FLIP-FLOP/MONOSTABLE 74121.. TTL, 14 PIN, DUAL-IN-LINE.
IC104	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC105	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC106	28461/407	IC ANALOGUE OPERATIONAL AMP AD712JN.. DUAL, 15V PWR BANDWDTH 200kHz, SLEW-RATE 16V/uS, I/P OFFSET
IC107	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC108	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC200	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC201	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC202	28461/368	IC ANALOGUE OPERATIONAL AMP OP27GP... ULTRA LOW NOISE, MONOLITHIC, 8 PIN, DUAL-IN-LINE.
IC203	28461/377	IC ANALOGUE OPERATIONAL AMP TL072BCP... DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC204	28461/378	IC ANALOGUE OPERATIONAL AMP TL074BCP.. QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC205	28461/348	IC ANALOGUE OPERATIONAL AMP TL072BCP... ,DUAL JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC300	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

Cir. Ref.	MI part number	Description
IC301	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC302	28461/348	IC ANALOGUE OPERATIONAL AMP TL072CP... DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC303	28469/182	IC DIGITAL BUFFER/LINE-DRIVER 74LS244.. 1 INPUT, OCTAL, NON-INVERTING, TRI-STATE BUS,
IC304	28462/619	IC DIGITAL FLIP-FLOP/D-TYPE 74LS377... OCTAL, POS EDGE TRIGGER, CLOCK ENABLE, TTL-SCHOTTKY-L/PWR, 20
IC305	28462/619	IC DIGITAL FLIP-FLOP/D-TYPE 74LS377... OCTAL, POS EDGE TRIGGER, CLOCK ENABLE, TTL-SCHOTTKY-L/PWR, 20
IC306	28462/619	IC DIGITAL FLIP-FLOP/D-TYPE 74LS377... OCTAL, POS EDGE TRIGGER, CLOCK ENABLE, TTL-SCHOTTKY-L/PWR, 20
IC307	28465/029	IC DIGITAL DECODER/DEMULTIPLEX 74LS139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC308	28465/029	IC DIGITAL DECODER/DEMULTIPLEX 74LS139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC309	28465/029	IC DIGITAL DECODER/DEMULTIPLEX 74LS139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC311	28465/029	IC DIGITAL DECODER/DEMULTIPLEX 74LS139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC312	28461/833	IC ANALOGUE SWITCH DG211CJ.... QUAD, SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC313	28461/936	IC ANALOGUE SWITCH DG211CJ.... QUAD, SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC314	28461/936	IC ANALOGUE SWITCH DG211CJ.... QUAD, SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC315	28461/936	IC ANALOGUE SWITCH DG211CJ.... QUAD, SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC316	28461/833	IC ANALOGUE SWITCH DG211CJ.... QUAD, SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC317	28461/936	IC ANALOGUE SWITCH DG211CJ.... QUAD, SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC318	28461/979	IC ANALOGUE SWITCH DG529CJ... DUAL, 15V LATCHABLE, CMOS, 18 PIN, DUAL-IN-LINE.
IC319	28461/936	IC ANALOGUE SWITCH DG211CJ.... QUAD, SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC321	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC322	28469/717	IC ANALOGUE SWITCH SD5002... QUAD, 7.5V ARRAYS, DMOS, 16 PIN, DUAL-IN-LINE.
L101	23642/567	INDUCTOR FIXED 1mH +/- 10% COATED-LACQUER, MINIATURE, 70mA 40R MAX, 40 Q @ 0.79 MHz, 2.2 MHz
L300	23642/558	INDUCTOR FIXED 33uH +/- 10% COATED-LACQUER, MINIATURE, 210mA 5R2 MAX, 55 Q @ 2.5 MHz, 20 MHz
L301	23642/558	INDUCTOR FIXED 33uH +/- 10% COATED-LACQUER, MINIATURE, 210mA 5R2 MAX, 55 Q @ 2.5 MHz, 20 MHz

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

Cir. Ref.	MI part number	Description
R102	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R103	24772/119	RESISTOR FIXED METAL-FILM 82K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R104	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R105	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R106	25711/612	RESISTOR VARIABLE CERMET LINEAR, 50K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R107	24753/364	RESISTOR FIXED METAL-FILM 4K99 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R108	24753/475	RESISTOR FIXED METAL-FILM 3K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R109	24753/626	RESISTOR FIXED METAL-FILM 2K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R111	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R112	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R113	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R114	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R115	24772/111	RESISTOR FIXED METAL-FILM 39K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R116	24773/258	RESISTOR FIXED METAL-FILM 240R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R117	24753/582	RESISTOR FIXED METAL-FILM 54K6 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R118	24753/347	RESISTOR FIXED METAL-FILM 110K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R119	24753/375	RESISTOR FIXED METAL-FILM 78K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R120	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R121	24753/618	RESISTOR FIXED METAL-FILM 24K3 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R122	24753/351	RESISTOR FIXED METAL-FILM 48K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R123	24753/370	RESISTOR FIXED METAL-FILM 28K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R124	24772/096	RESISTOR FIXED METAL-FILM 9K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R125	24772/096	RESISTOR FIXED METAL-FILM 9K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R126	24772/109	RESISTOR FIXED METAL-FILM 33K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R127	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R128	24772/095	RESISTOR FIXED METAL-FILM 8K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R129	25711/603	RESISTOR VARIABLE CERMET LINEAR, 10K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R131	24772/110	RESISTOR FIXED METAL-FILM 36K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

R132	24772/126	RESISTOR FIXED METAL-FILM 160K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R133	24753/624	RESISTOR FIXED METAL-FILM 1K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R134	24753/377	RESISTOR FIXED METAL-FILM 8K66 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R135	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R136	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R137	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R138	25711/613	RESISTOR VARIABLE CERMET LINEAR, 100K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R139	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R141	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R142	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R143	24772/109	RESISTOR FIXED METAL-FILM 33K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R144	24772/111	RESISTOR FIXED METAL-FILM 39K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R145	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R146	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R147	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R148	24772/079	RESISTOR FIXED METAL-FILM 1K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R149	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R150	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R151	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R152	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R153	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R154	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R155	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R156	24772/090	RESISTOR FIXED METAL-FILM 5K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R157	24753/582	RESISTOR FIXED METAL-FILM 54K6 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R158	24753/347	RESISTOR FIXED METAL-FILM 110K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R159	24753/375	RESISTOR FIXED METAL-FILM 78K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R160	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

R161	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R162	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R163	24753/618	RESISTOR FIXED METAL-FILM 24K3 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R164	24753/351	RESISTOR FIXED METAL-FILM 48K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R165	24753/370	RESISTOR FIXED METAL-FILM 28K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R166	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R167	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R168	25711/610	RESISTOR VARIABLE CERMET LINEAR, 5K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB, 0.375in
R169	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R171	24772/111	RESISTOR FIXED METAL-FILM 39K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R172	25711/603	RESISTOR VARIABLE CERMET LINEAR, 10K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R173	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R174	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R175	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R176	24772/125	RESISTOR FIXED METAL-FILM 150K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R177	24772/115	RESISTOR FIXED METAL-FILM 56K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R200	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R201	24753/337	RESISTOR FIXED METAL-FILM 1M +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R202	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R203	24753/582	RESISTOR FIXED METAL-FILM 54K6 +/- 0.5% 250mW 200V 50 ppm/DEG C, AXIAL, (LOOSE OR TAPED).
R204	24753/363	RESISTOR FIXED METAL-FILM 499K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R205	24753/355	RESISTOR FIXED METAL-FILM 40K2 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R206	24753/640	RESISTOR FIXED METAL-FILM 4K32 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R207	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R208	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R209	25711/609	RESISTOR VARIABLE CERMET LINEAR, 2K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB, 0.375in
R210	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R211	24753/355	RESISTOR FIXED METAL-FILM 40K2 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

R212	24753/482	RESISTOR FIXED METAL-FILM 4K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R213	25711/613	RESISTOR VARIABLE CERMET LINEAR, 100K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R214	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R215	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R216	24753/364	RESISTOR FIXED METAL-FILM 4K99 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R217	24753/475	RESISTOR FIXED METAL-FILM 3K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R218	24753/624	RESISTOR FIXED METAL-FILM 1K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R219	24753/624	RESISTOR FIXED METAL-FILM 1K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R220	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R221	24772/128	RESISTOR FIXED METAL-FILM 200K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R222	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R223	24772/120	RESISTOR FIXED METAL-FILM 91K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R224	24772/098	RESISTOR FIXED METAL-FILM 11K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R225	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R226	24753/355	RESISTOR FIXED METAL-FILM 40K2 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R227	24753/640	RESISTOR FIXED METAL-FILM 4K32 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R228	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R229	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R231	25711/603	RESISTOR VARIABLE CERMET LINEAR, 10K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R232	24753/539	RESISTOR FIXED METAL-FILM 18K72 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R233	24753/642	RESISTOR FIXED METAL-FILM 1K87 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R234	24753/628	RESISTOR FIXED METAL-FILM 10K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R235	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R236	24753/364	RESISTOR FIXED METAL-FILM 4K99 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R237	24753/475	RESISTOR FIXED METAL-FILM 3K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R238	24753/624	RESISTOR FIXED METAL-FILM 1K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R239	24753/624	RESISTOR FIXED METAL-FILM 1K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R241	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

R242	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG C, AXIAL, (TAPED).
R243	25711/613	RESISTOR VARIABLE CERMET LINEAR, 100K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R244	25711/613	RESISTOR VARIABLE CERMET LINEAR, 100K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R245	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL; (TAPED).
R300	24753/479	RESISTOR FIXED METAL-FILM 3K57 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R301	24753/542	RESISTOR FIXED METAL-FILM 150K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R302	24753/376	RESISTOR FIXED METAL-FILM 8K45 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R303	24753/371	RESISTOR FIXED METAL-FILM 29K4 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R304	24753/580	RESISTOR FIXED METAL-FILM 30K8 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R305	25711/610	RESISTOR VARIABLE CERMET LINEAR, 5K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB, 0.375in
R306	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R307	24753/372	RESISTOR FIXED METAL-FILM 35K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R308	24753/367	RESISTOR FIXED METAL-FILM 12K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R309	24753/367	RESISTOR FIXED METAL-FILM 12K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R310	24753/570	RESISTOR FIXED METAL-FILM 6K92 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R311	24753/538	RESISTOR FIXED METAL-FILM 15K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R312	24732/261	RESISTOR FIXED METAL-FILM 59K +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R313	24732/262	RESISTOR FIXED METAL-FILM 5K23 +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R314	25711/611	RESISTOR VARIABLE CERMET LINEAR, 20K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R315	24732/200	RESISTOR FIXED METAL-FILM 226K +/- 0.25% 250mW 200V 25 ppm/DEG.C, LOW-INDUCTANCE, AXIAL, (LOOSE
R316	24732/265	RESISTOR FIXED METAL-FILM 19K6 +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R317	24732/264	RESISTOR FIXED METAL-FILM 39K2 +/- 0.25% 250mW 200V 25 ppm/DEG C, AXIAL, (LOOSE OR TAPED).
R318	24753/583	RESISTOR FIXED METAL-FILM 61K9 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R319	24732/261	RESISTOR FIXED METAL-FILM 59K +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R320	25711/611	RESISTOR VARIABLE CERMET LINEAR, 20K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R321	24732/262	RESISTOR FIXED METAL-FILM 5K23 +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R322	24732/263	RESISTOR FIXED METAL-FILM 232K +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R323	24732/265	RESISTOR FIXED METAL-FILM 19K6 +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

R324	24732/264	RESISTOR FIXED METAL-FILM 39K2 +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R325	24753/378	RESISTOR FIXED METAL-FILM 90K9 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R326	24753/362	RESISTOR FIXED METAL-FILM 34K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R327	24753/362	RESISTOR FIXED METAL-FILM 34K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R328	24753/355	RESISTOR FIXED METAL-FILM 40K2 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R329	24753/367	RESISTOR FIXED METAL-FILM 12K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R331	24753/367	RESISTOR FIXED METAL-FILM 12K7 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R332	24753/369	RESISTOR FIXED METAL-FILM 23K2 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R334	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R335	24772/070	RESISTOR FIXED METAL-FILM 750R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R336	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R337	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R338	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R339	25711/603	RESISTOR VARIABLE CERMET LINEAR, 10K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R340	24321/885	RESISTOR FIXED METAL-GLAZE 10M +/- 5% 250mW 1.6KV 200 ppm/DEG.C, AXIAL, (TAPED).
RLA	23486/525	RELAY REED, SINGLE-POLE N/O, 5V COIL, 500R - CONTACTS 0.5A, 200V, MAX LOAD 10W, SCREEN CAN SPOT
TP1	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
TP2	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
TP3	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
TP4	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
TP5	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
TP6	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER

Cir. Ref.	MI part number	Description

Demodulation and scope board AB5/2 (contd.)

TR100	28452/771	TRANSISTOR NPN BIPOLAR BC209C.... 20V 150MHz 200mW 100mA 420hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR101	28459/010	TRANSISTOR N-CHANNEL-DEPLETION MOSFET 40673.... 20V 400MHz 330mW 50mA DUAL-GATE, 4 LEAD, TO-72.
TR102	28452/777	TRANSISTOR NPN BIPOLAR BC109B,C.... 20V 150MHz 300mW 100mA 410hFE @ 2mA, TO-18.

AF synthesizer board AB6/1

When ordering, prefix circuit reference with AB6/1.

Cir. Ref.	MI part number	Description
	44829/526	Complete unit
C1	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C2	26343/445	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V N470 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C3	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C4	26538/904	CAPACITOR FIXED POLYSTYRENE 1.2nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C5	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C6	26343/445	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V N470 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C7	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26538/904	CAPACITOR FIXED POLYSTYRENE 1.2nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C9	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C10	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C11	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C12	26582/211	CAPACITOR FIXED POLYESTER 100nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE).
C13	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C14	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C15	26538/918	CAPACITOR FIXED POLYSTYRENE 4.7nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C16	26538/930	CAPACITOR FIXED POLYSTYRENE 15nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C17	26538/924	CAPACITOR FIXED POLYSTYRENE 8.2nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C18	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C19	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C20	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C21	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C22	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C23	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C24	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C25	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AF synthesizer board AB6/1 (contd.)

C26	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C27	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C28	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C29	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C30	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C31	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C32	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C33	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C34	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C35	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C36	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C37	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C38	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C39	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C40	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C41	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C42	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C43	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C44	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C45	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C46	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C47	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C48	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C49	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C50	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C51	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C52	26346/120	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R MULTILAYER, AXIAL, (TAPED).
C53	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AF synthesizer board AB6/1 (contd.)

C54	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C55	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C56	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C57	26343/438	CAPACITOR FIXED CERAMIC 120pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C58	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C59	26343/445	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V N470 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C60	26343/445	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V N470 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C61	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C62	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C63	26343/445	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V N470 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C64	26343/445	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V N470 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C65	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C66	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
D1	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D2	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D3	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D4	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D5	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D6	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D7	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D8	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D9	28371/494	DIODE ZENER 1N825... 250mW 6.2V 5% 50mA 20ppm/DEG.C, AXIAL, DO-35, (TAPED).
D10	28371/494	DIODE ZENER 1N825... 250mW 6.2V 5% 50mA 20ppm/DEG.C, AXIAL, DO-35, (TAPED).
D11	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D12	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D13	28371/494	DIODE ZENER 1N825... 250mW 6.2V 5% 50mA 20ppm/DEG.C, AXIAL, DO-35, (TAPED).

Cir. Ref.	MI part number	Description

AF synthesizer board AB6/1 (contd.)

D14	28371/494	DIODE ZENER 1N825... 250mW 6.2V 5% 50mA 20ppm/DEG.C, AXIAL, DO-35, (TAPED).
IC1	28462/627	IC DIGITAL FLIP-FLOP/D-TYPE 74HC273.... OCTAL, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 20 PIN,
IC2	28469/508	IC DIGITAL ARRAY-LOGIC L5A0586.. AUDIO SYNTHESIZER TO MI CUSTOM SPEC, CMOS, 68 PIN, PLCC.
IC3	28469/508	IC DIGITAL ARRAY-LOGIC L5A0586.. AUDIO SYNTHESIZER TO MI CUSTOM SPEC, CMOS, 68 PIN, PLCC.
IC6	28469/400	IC ANALOGUE D/A-CONVERTER AD7524JN... 15V 8 BIT MULTIPLYING, SLOW CURRENT SETTLE, CMOS, 16 PIN,
IC7	28469/400	IC ANALOGUE D/A-CONVERTER AD7524JN... 15V 8 BIT MULTIPLYING, SLOW CURRENT SETTLE, CMOS, 16 PIN,
IC8	28461/363	IC ANALOGUE OPERATIONAL AMP NE5532... DUAL, LINEAR, MONOLITHIC, 8 PIN, DUAL-IN-LINE.
IC9	28461/363	IC ANALOGUE OPERATIONAL AMP NE5532... DUAL, LINEAR, MONOLITHIC, 8 PIN, DUAL-IN-LINE.
IC10	28461/977	IC ANALOGUE D/A-CONVERTER 7537.. DUAL, 15V 12 BIT, 8+4 LOADING, REL-ACC +/-1 LSB, CMOS, 24 PIN,
IC11	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC12	28461/495	IC ANALOGUE AUDIO-AMPLIFIER TDA2030.. SINGLE, 28V 14W, MONOLITHIC, 5 PIN, TO-220.
IC13	28469/428	IC ANALOGUE D/A-CONVERTER 7528... DUAL, 8 BIT BUFFERED MULTIPLYING, CMOS, 20 PIN, DUAL-IN-LINE.
IC14	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC15	28469/428	IC ANALOGUE D/A-CONVERTER 7528... DUAL, 8 BIT BUFFERED MULTIPLYING, CMOS, 20 PIN, DUAL-IN-LINE.
IC16	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC17	28462/627	IC DIGITAL FLIP-FLOP/D-TYPE 74HC273.... OCTAL, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 20 PIN,
IC18	28462/627	IC DIGITAL FLIP-FLOP/D-TYPE 74HC273.... OCTAL, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 20 PIN,
IC19	28462/627	IC DIGITAL FLIP-FLOP/D-TYPE 74HC273.... OCTAL, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 20 PIN,
IC20	28469/436	IC ANALOGUE D/A-CONVERTER 7545... 12 BIT BUFFERED, MULTIPLYING, CMOS, 20 PIN, DUAL-IN-LINE.
IC22	28466/365	IC DIGITAL NAND-GATE 74HC00... 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC23	28465/040	IC DIGITAL DECODER/DEMULTIPLEX 74HC138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC24	28465/040	IC DIGITAL DECODER/DEMULTIPLEX 74HC138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC25	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC26	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC27	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC28	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.

Cir. Ref.	MI part number	Description

AF synthesizer board AB6/1 (contd.)

IC29	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC30	28462/627	IC DIGITAL FLIP-FLOP/D-TYPE 74HC273.... OCTAL, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 20 PIN,
IC31	28469/128	IC DIGITAL BUFFER/LINE-DRIVER 74HC244.. 1 INPUT, OCTAL, NON-INVERTING, TRI-STATE BUS, CMOS-H/SPEED,
IC34	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC35	28469/119	IC DIGITAL INVERTER 74HC14.. HEX, SCHMITT-TRIGGER OPERATION, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC36	28462/614	IC DIGITAL FLIP-FLOP/D-TYPE 74LS175... QUAD, POS EDGE TRIGGER, PLUS CLEAR, TTL-SCHOTTKY-L/PWR, 16
IC37	28462/422	IC DIGITAL LATCH 74HCT573.. OCTAL, TRI-STATE, NON-INVERTING, TRANSPARENT, D-TYPE,
IC38	28468/315	IC DIGITAL FLIP-FLOP/MONOSTABLE 74HC123A.. DUAL, POS EDGE TRIGGER, tW=RC, CMOS-H/SPEED, 16 PIN,
IC39	28462/622	IC DIGITAL FLIP-FLOP/D-TYPE 74HC74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR, CMOS-H/SPEED,
IC40	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
L1	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L2	23642/555	INDUCTOR FIXED 10uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 45 Q @ 7.9 MHz, 45 MHz
L3	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L4	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
R1	25748/507	RESISTOR VARIABLE CERMET LINEAR, 10K 10% 300mW 200V 100 ppm/DEG.C, MULTI-TURN, HORIZONTAL-PCB,
R2	24772/068	RESISTOR FIXED METAL-FILM 620R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24723/405	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R4	24723/405	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R5	24723/405	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R6	24723/405	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R7	24723/405	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R8	24723/405	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R9	24723/215	RESISTOR FIXED METAL-FILM 1K09 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R10	24723/405	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AF synthesizer board AB6/1 (contd.)

R11	24723/215	RESISTOR FIXED METAL-FILM 1K09 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R12	24723/405	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R14	24723/375	RESISTOR FIXED METAL-FILM 40K +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (TAPED).
R15	24753/359	RESISTOR FIXED METAL-FILM 13K3 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R16	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	25748/507	RESISTOR VARIABLE CERMET LINEAR, 10K 10% 300mW 200V 100 ppm/DEG.C, MULTI-TURN, HORIZONTAL-PCB,
R21	24772/070	RESISTOR FIXED METAL-FILM 750R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24753/359	RESISTOR FIXED METAL-FILM 13K3 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R23	24723/375	RESISTOR FIXED METAL-FILM 40K +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/096	RESISTOR FIXED METAL-FILM 9K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24753/374	RESISTOR FIXED METAL-FILM 6K65 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R28	24753/663	RESISTOR FIXED METAL-FILM 20K +/- 0 5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R29	24753/663	RESISTOR FIXED METAL-FILM 20K +/- 0.5% 250mW 200V 50 ppm/DEG C, AXIAL, (TAPED).
R30	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24753/362	RESISTOR FIXED METAL-FILM 34K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R32	24772/112	RESISTOR FIXED METAL-FILM 43K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24681/513	RESISTOR NETWORK ISOLATED, THICK-FILM, 330R 2% 1.5W 500 ppm/DEG.C, LOW-PROFILE, 16 PIN,

Cir. Ref.	MI part number	Description

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Cir. Ref.	MI part number	Description
R41	24773/249	RESISTOR FIXED METAL-FILM 100R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/135	RESISTOR FIXED METAL-FILM 390K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/100	RESISTOR FIXED METAL-FILM 13K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
TR1	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR2	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR3	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR4	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR5	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR6	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR7	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR8	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).

Input switching assembly AC0/2

This assembly should not be dismantled.

44990/998	Complete unit

Cir. Ref.	MI part number	Description

CRT drive board AC1

When ordering, prefix circuit reference with AC1.

	44828/890	Complete unit
C1	26415/813	CAPACITOR FIXED ALUMINIUM 100uF -20/+100% 25V ELECTROLYTIC, AXIAL, (LOOSE).
C2	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C3	26422/323	CAPACITOR FIXED ALUMINIUM 4700uF -10/+30% 25V ELECTROLYTIC, PCB PIN TERMINATION, 4 RADIAL PINS.
C4	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C5	26582/212	CAPACITOR FIXED POLYESTER 150nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE OR TAPED).
C6	26582/224	CAPACITOR FIXED POLYESTER 68nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE).
C7	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26421/132	CAPACITOR FIXED ALUMINIUM 2200uF +/-20% 16V ELECTROLYTIC, RADIAL, 7.5mm PWP, (LOOSE OR TAPED).
C9	26582/212	CAPACITOR FIXED POLYESTER 150nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE OR TAPED).
C10	26415/801	CAPACITOR FIXED ALUMINIUM 4.7uF -20/+100% 63V ELECTROLYTIC, AXIAL, (TAPED).
C11	26421/109	CAPACITOR FIXED ALUMINIUM 3.3uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C12	26538/926	CAPACITOR FIXED POLYSTYRENE 10nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C13	26538/926	CAPACITOR FIXED POLYSTYRENE 10nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C15	26582/234	CAPACITOR FIXED POLYESTER 22nF +/-10% 400V RADIAL, 10.2mm PWP, (LOOSE).
C16	26582/219	CAPACITOR FIXED POLYESTER 1.5uF +/-10% 100V 250 ppm/DEG.C, RADIAL, 22.5mm PWP, (LOOSE).
C17	26582/490	CAPACITOR FIXED POLYPROPYLENE 12nF +/-10% 630V RADIAL, 15 2mm PWP, PULSE RISE TIME 2100V/uS,
C18	26421/123	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C19	26421/130	CAPACITOR FIXED ALUMINIUM 1000uF +/-20% 35V ELECTROLYTIC, RADIAL, 7.5mm PWP, (LOOSE OR TAPED).
C20	26582/226	CAPACITOR FIXED POLYESTER 220nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE).
C21	26582/206	CAPACITOR FIXED POLYESTER 47nF +/-10% 250V RADIAL, 10.2mm PWP, (LOOSE)
C22	26415/801	CAPACITOR FIXED ALUMINIUM 4.7uF -20/+100% 63V ELECTROLYTIC, AXIAL, (TAPED).
C23	26582/206	CAPACITOR FIXED POLYESTER 47nF +/-10% 250V RADIAL, 10.2mm PWP, (LOOSE).
C25	26582/206	CAPACITOR FIXED POLYESTER 47nF +/-10% 250V RADIAL, 10.2mm PWP, (LOOSE)
C26	26531/114	CAPACITOR FIXED POLYCARBONATE 22nF +/-10% 630V 200 ppm/DEG C, RADIAL, 15mm PWP, (LOOSE).
C27	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED)

Cir. Ref.	MI part number	Description

CRT drive board AC1(contd.)

Cir. Ref.	MI part number	Description
C28	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C30	26421/127	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C31	26421/127	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C32	26421/143	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C33	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C34	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C35	26421/009	CAPACITOR FIXED ALUMINIUM 2.2uF +/-20% 50V ELECTROLYTIC, RADIAL, 2mm PWP, LOW LEAKAGE WITH
C36	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C37	26421/143	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C38	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C40	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C41	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description
D1	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D2	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D3	28358/726	DIODE RECTIFIER BYW95C... 600V 3A -1.5Vf @ 5A, AVALANCHE, AXIAL, SOD-64, (LOOSE).
D4	28359/103	DIODE RECTIFIER BA159. . 1KV 400mA 1.3Vf @ 1A, AXIAL, CASE-P1, (TAPED).
D5	28359/103	DIODE RECTIFIER BA159... 1KV 400mA 1.3Vf @ 1A, AXIAL, CASE-P1, (TAPED).
D7	28359/103	DIODE RECTIFIER BA159... 1KV 400mA 1.3Vf @ 1A, AXIAL, CASE-P1, (TAPED).
D8	28359/103	DIODE RECTIFIER BA159... 1KV 400mA 1.3Vf @ 1A, AXIAL, CASE-P1, (TAPED).
D9	28359/103	DIODE RECTIFIER BA159... 1KV 400mA 1.3Vf @ 1A, AXIAL, CASE-P1, (TAPED).
D11	28357/016	DIODE RECTIFIER RGP30G, MR854. . 400V 3A 1.25Vf @ 3A, AXIAL, CASE-267 OR DO-201AD, (LOOSE).
D12	28371/494	DIODE ZENER 1N825... 250mW 6.2V 5% 50mA 20ppm/DEG.C, AXIAL, DO-35, (TAPED).
D13	28373/067	DIODE ZENER BZX79-C22.... 500mW 22V 5% 250mA AXIAL, DO-35, (TAPED).
D14	28371/417	DIODE ZENER BZX79-C5V6. . 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D15	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D16	28359/103	DIODE RECTIFIER BA159.. 1KV 400mA 1.3Vf @ 1A, AXIAL, CASE-P1, (TAPED).

Cir. Ref.	MI part number	Description

CRT drive board AC1 (contd.)

Cir. Ref.	MI part number	Description
IC1	28231/408	IC ANALOGUE TV VERTICAL DEFLECTN TDA1170.. 27V FOR MONOCHROME AND COLOUR, MONOLITHIC, 12 PIN,
IC2	28468/404	IC DIGITAL FLIP-FLOP/MONOSTABLE 74LS221... DUAL, NON-RETRIGGERABLE, WITH RESET, TTL-SCHOTTKY-L/PWR,
IC3	28466/406	IC DIGITAL EXCLUSIVE-OR 74LS86... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC4	28464/014	IC DIGITAL COUNTER 74LS90.. 4 BIT, DECADE, DIVIDE BY 2,5 OR 10, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC5	28464/127	IC DIGITAL COUNTER 74LS390.. 4 BIT, DUAL, DECADE RIPPLE, TTL-SCHOTTKY-L/PWR, 16 PIN, DUAL-IN-LINE.
L1	44290/920	WOUND-PART INDUCTOR, SCREW-CORE, M6 x 1mm, 111.5 TURNS, MAGNET ASSY FITTED.
L3	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
L4	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
L5	23642/558	INDUCTOR FIXED 33uH +/- 10% COATED-LACQUER, MINIATURE, 210mA 5R2 MAX, 55 Q @ 2.5 MHz, 20 MHz
L6	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLB	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLC	23444/334	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, PCB-MOUNTING, NICKEL PLATED BODY.
R1	24772/131	RESISTOR FIXED METAL-FILM 270K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/127	RESISTOR FIXED METAL-FILM 180K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	25711/613	RESISTOR VARIABLE CERMET LINEAR, 100K 10% 500mW 200V 150 ppm/DEG C, SINGLE-TURN, VERTICAL-PCB,
R4	24772/131	RESISTOR FIXED METAL-FILM 270K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/111	RESISTOR FIXED METAL-FILM 39K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	25711/612	RESISTOR VARIABLE CERMET LINEAR, 50K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB,
R7	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/115	RESISTOR FIXED METAL-FILM 56K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

CRT drive board AC1 (contd.)

R11	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/001	RESISTOR FIXED METAL-FILM 1R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/115	RESISTOR FIXED METAL-FILM 56K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/013	RESISTOR FIXED METAL-FILM 3R3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R15	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/045	RESISTOR FIXED METAL-FILM 68R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24772/091	RESISTOR FIXED METAL-FILM 5K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	25711/610	RESISTOR VARIABLE CERMET LINEAR, 5K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, VERTICAL-PCB, 0.375in
R22	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	25611/193	RESISTOR VARIABLE CARBON LINEAR, 1M 20% 250mW 500V 1K ppm/DEG.C, SINGLE-TURN, HORIZONTAL-PCB, 15mm
R27	24321/876	RESISTOR FIXED METAL-GLAZE 1M8 +/- 5% 250mW 1.6KV 200 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33(SIC)	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/067	RESISTOR FIXED METAL-FILM 560R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/017	RESISTOR FIXED METAL-FILM 4R7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	25748/510	RESISTOR VARIABLE CERMET LINEAR, 100K 10% 300mW 200V 100 ppm/DEG.C, MULTI-TURN, HORIZONTAL-PCB,
R40	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

CRT drive board AC1 (contd.)

R42	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24773/301	RESISTOR FIXED METAL-FILM 15K +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/063	RESISTOR FIXED METAL-FILM 390R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R48	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R49	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R50	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/090	RESISTOR FIXED METAL-FILM 5K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R53	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R54	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R55	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R56	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R57	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
T1	28231/402	CRT-ACCESSORY EHT TRANSFORMER, LINE OUTPUT, I/P 11V, O/P 12KV WITH CRT ANODE CONNECTION, 380mm
TR1	28455/787	TRANSISTOR NPN BIPOLAR BFY76... 60V 30MHz 360mW 50mA 280hFE @ 10mA, TO-18.
TR2	28455/787	TRANSISTOR NPN BIPOLAR BFY76... 60V 30MHz 360mW 50mA 280hFE @ 10mA, TO-18.
TR3	28458/690	TRANSISTOR NPN BIPOLAR BU806.... DARLINGTON, 200V 60W 8A 100hFE @ 5A, TO-220.
TR4	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR5	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR6	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR7	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
	43130/524	CABLE ASSEMBLY, CRIMP TERMINAL 8 WAY (TO AB1/1 PLD), (TO AC1)

Cir. Ref.	MI part number	Description

Attenuator assembly (except Option 1) AD0

This assembly should not be dismantled.

	44429/039	Complete unit

GPIB interface unit AD1

When ordering, prefix circuit reference with AD1.

	44990/845	Complete unit
C1	26486/219	CAPACITOR FIXED TANTALUM 4.7uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C2	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
IC1	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC2	28469/194	IC DIGITAL BUFFER 74LS365A... HEX, TRI-STATE, NON-INVERTING, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC3	28467/027	IC MICRO CONTROLLER, 8291A/7210... INTERFACE BUS TALKER/LISTENER, NMOS, 40 PIN, DUAL-IN-LINE.
IC4	28469/190	IC DIGITAL TRANSCEIVER 3448... QUAD, INTERFACE BUS, TRI-STATE, TTL, 16 PIN, DUAL-IN-LINE.
IC5	28469/190	IC DIGITAL TRANSCEIVER 3448... QUAD, INTERFACE BUS, TRI-STATE, TTL, 16 PIN, DUAL-IN-LINE.
IC6	28469/190	IC DIGITAL TRANSCEIVER 3448... QUAD, INTERFACE BUS, TRI-STATE, TTL, 16 PIN, DUAL-IN-LINE.
IC7	28469/190	IC DIGITAL TRANSCEIVER 3448... QUAD, INTERFACE BUS, TRI-STATE, TTL, 16 PIN, DUAL-IN-LINE.
R1	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

GPIB interface unit AD1 (contd.)

Cir. Ref.	MI part number	Description
	43129/825	CABLE ASSEMBLY, RIBBON SOCKET, 20 WAY (TO AB1/1 PLC)
	23465/897	SWITCH ROCKER, SINGLE-POLE 6 SWITCHES, ON-OFF,
	23435/133	CONNECTOR TYPE-57, SOCKET, 24 WAY, EDGE MOUNTED,

Main keyboard AF1/2

This is included in the front panel assembly as listed under 'Miscellaneous mechanical parts'. The front panel is designed to be replaceable as a complete assembly. However, under certain conditions, the following parts may be available.

When ordering, prefix circuit reference with AF1/2.

Cir. Ref.	MI part number	Description
	B2955FA19821	Complete unit (PCB assembly with electronic components but not including plastic key mat)
D1	B2955P3051S1	LAMP LED HLMP-P305-151 YELLOW
D2	B2955P3051S1	LAMP LED HLMP-P305-151 YELLOW
D3	B2955P3051S1	LAMP LED HLMP-P305-151 YELLOW
D4	B2955P3051S1	LAMP LED HLMP-P305-151 YELLOW
D5	B2955P3051S1	LAMP LED HLMP-P305-151 YELLOW
IC1	B295574HC174	ICD 74HC174
R1	24773/257	RES MF 220R .25W 2% 100 PPM
R2	24773/257	RES MF 220R .25W 2% 100 PPM
R3	24773/257	RES MF 220R .25W 2% 100 PPM
R4	24773/257	RES MF 220R .25W 2% 100 PPM
R5	24773/257	RES MF 220R .25W 2% 100 PPM

Cir. Ref.	MI part number	Description

Scope keyboard AF2/2

This is included in the front panel assembly as listed under 'Miscellaneous mechanical parts'. The front panel is designed to be replaceable as a complete assembly. However, under certain conditions, the following parts may be available.

When ordering, prefix circuit reference with AF2/2.

	B2955FA19822	Complete unit (PCB assembly with electronic components but not including plastic key mat)
R1	25761/005	RV PLAS 50K LIN 0.25W 20%
R2	25761/005	RV PLAS 50K LIN 0.25W 20%
R3	25761/005	RV PLAS 50K LIN 0.25W 20%
R4	25761/005	RV PLAS 50K LIN 0.25W 20%

Cir. Ref.	MI part number	Description

Power supply board AR1/1

When ordering, prefix circuit reference with AR1/1.

	44829/645	Complete unit
C4	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C5	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C6	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C7	26421/139	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 63V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C8	26421/130	CAPACITOR FIXED ALUMINIUM 1000uF +/-20% 35V ELECTROLYTIC, RADIAL, 7.5mm PWP, (LOOSE OR TAPED).
C9	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C10	26421/109	CAPACITOR FIXED ALUMINIUM 3.3uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C11	26421/109	CAPACITOR FIXED ALUMINIUM 3.3uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C12	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C13	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C14	26383/584	CAPACITOR FIXED CERAMIC 820pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C15	26421/118	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C16	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C17	26421/130	CAPACITOR FIXED ALUMINIUM 1000uF +/-20% 35V ELECTROLYTIC, RADIAL, 7.5mm PWP, (LOOSE OR TAPED).
C18	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C19	26421/130	CAPACITOR FIXED ALUMINIUM 1000uF +/-20% 35V ELECTROLYTIC, RADIAL, 7.5mm PWP, (LOOSE OR TAPED).
C21	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C22	26421/132	CAPACITOR FIXED ALUMINIUM 2200uF +/-20% 16V ELECTROLYTIC, RADIAL, 7.5mm PWP, (LOOSE OR TAPED).
C23	26383/031	CAPACITOR FIXED CERAMIC 100nF -20/+80% 30V K7004 SINGLELAYER, RADIAL, 7.5mm PWP, (LOOSE).
C24	26421/132	CAPACITOR FIXED ALUMINIUM 2200uF +/-20% 16V ELECTROLYTIC, RADIAL, 7.5mm PWP, (LOOSE OR TAPED).
C25	26582/211	CAPACITOR FIXED POLYESTER 100nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE).
C27	26421/127	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C28	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C29	26421/129	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C30	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Power supply board AR1/1 (contd.)

C35	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C36	26582/211	CAPACITOR FIXED POLYESTER 100nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE).
C37	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C38	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C39	26582/211	CAPACITOR FIXED POLYESTER 100nF +/-10% 100V 250 ppm/DEG.C, RADIAL, 10.2mm PWP, (LOOSE).
C40	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C41	26421/139	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 63V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
D1	28371/371	DIODE ZENER BZX79-C4V7... 500mW 4.7V 5% 250mA AXIAL, DO-35, (TAPED).
D3	28371/417	DIODE ZENER BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D4	28371/417	DIODE ZENER BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D5	28371/417	DIODE ZENER BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D6	28371/417	DIODE ZENER BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D7	28337/126	DIODE RECTIFIER BAY72... 500mW 100V 225mA 0.78Vf @ 200mA, AXIAL, DO-35, (TAPED).
D8	28337/126	DIODE RECTIFIER BAY72... 500mW 100V 225mA 0.78Vf @ 200mA, AXIAL, DO-35, (TAPED).
D9	28377/143	DIODE ZENER BZV85-C75... 1W 75V 5% 250mA AXIAL, DO-41, (TAPED).
D11	28372/584	DIODE ZENER BZX79-C18.... 500mW 18V 5% 250mA AXIAL, DO-35, (TAPED).
D12	28372/472	DIODE ZENER BZX79-C16.... 500mW 16V 5% 250mA AXIAL, DO-35, (TAPED).
D13	28349/013	DIODE SCHOTTKY BAT42... 400mW 30V 100mA 0.5Vf @ 50mA, FAST-SWITCHING, AXIAL, DO-35, (TAPED).
D14	28356/019	DIODE RECTIFIER BYV28-200... 200V 3.5A 30nS, 100 ppm/DEG.C, AXIAL, (TAPED).
D15	28356/019	DIODE RECTIFIER BYV28-200... 200V 3.5A 30nS, 100 ppm/DEG.C, AXIAL, (TAPED).
D16	28356/019	DIODE RECTIFIER BYV28-200... 200V 3.5A 30nS, 100 ppm/DEG.C, AXIAL, (TAPED).
D17	28356/019	DIODE RECTIFIER BYV28-200... 200V 3.5A 30nS, 100 ppm/DEG.C, AXIAL, (TAPED).
D18	28355/165	DIODE SCHOTTKY 20CTQ045... 45V 16A RECTIFIER, DUAL, COMMON CATHODE, PLASTIC PACKAGE, TO-220AB.
D21	28355/172	DIODE SCHOTTKY 11DQ06... 60V 1A RECTIFIER, AXIAL, DO-41, (TAPED).
D22	28355/172	DIODE SCHOTTKY 11DQ06... 60V 1A RECTIFIER, AXIAL, DO-41, (TAPED).

Cir. Ref.	MI part number	Description

Power supply board AR1/1 (contd.)

D23	28374/120	DIODE ZENER 1N5365B.... 5W 36V 5% AXIAL, CASE-17, (TAPED).
D24	28371/481	DIODE ZENER BZX79-C6V2... 500mW 6.2V 5% 250mA AXIAL, DO-35, (TAPED).
D25	28372/309	DIODE ZENER BZX79-C15.... 500mW 15V 5% 250mA AXIAL, DO-35, (TAPED).
D26	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D27	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D28	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D29	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D30	28349/014	DIODE SCHOTTKY BAT29... 100mW 5V 0.55Vf @ 10mA SMALL-SIGNAL, AXIAL, DO-35, (TAPED).
D31	28371/494	DIODE ZENER 1N825... 250mW 6.2V 5% 50mA 20ppm/DEG.C, AXIAL, DO-35, (TAPED).
D32	28349/013	DIODE SCHOTTKY BAT42... 400mW 30V 100mA 0.5Vf @ 50mA, FAST-SWITCHING, AXIAL, DO-35, (TAPED).
D33	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D34	28349/013	DIODE SCHOTTKY BAT42... 400mW 30V 100mA 0.5Vf @ 50mA, FAST-SWITCHING, AXIAL, DO-35, (TAPED).
IC1	28461/739	IC ANALOGUE PULSE-WIDTH-MODULATR TL494... REFERENCE, MONOLITHIC, 16 PIN, DUAL-IN-LINE.
IC2	28464/162	IC DIGITAL COUNTER 74LS393.. 4 BIT, DUAL, BINARY RIPPLE, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC3	28625/008	MODULE OPTO COUPLED ISOLATOR, CNY17... 3V 90mA GALLIUM ARSENIDE INFRARED DIODE, PHOTOTRANSISTOR,
IC4	28625/008	MODULE OPTO COUPLED ISOLATOR, CNY17... 3V 90mA GALLIUM ARSENIDE INFRARED DIODE, PHOTOTRANSISTOR,
IC5	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC6	28461/734	IC ANALOGUE VOLTAGE-REGULATOR 78L05AC... 5V 100mA POSITIVE, LINEAR, MONOLITHIC, 3 PIN, TO-92.
L1	44291/015	WOUND-PART INDUCTOR, 640uH, POT-CORE, RM10, 50.5 TURNS, LABELLED.
L3	44290/899	WOUND-PART INDUCTOR, 1.1mH, POT-CORE, RM7, 53.5 TURNS, LABELLED.
L5	44291/016	WOUND-PART INDUCTOR, 200uH, POT-CORE, RM10, 35.5:35.5 TURNS, BIFILAR WOUND, LABELLED.
L7	44290/901	WOUND-PART INDUCTOR, 0.48mH, POT-CORE, RM7, 35.5 TURNS, LABELLED.
L9	44290/957	WOUND-PART INDUCTOR, WIRE-ENDED-CORE, 10 TURNS, VARNISHED.

Cir. Ref.	MI part number	Description

Power supply board AR1/1 (contd.)

PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLB	23435/911	CONNECTOR MULTIWAY, PCB HEADER, 6 WAY, STRAIGHT, 5.08mm PITCH, TIN PLATED PINS, 1.14mm SQUARE.
PLC	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLD	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24773/281	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24773/297	RESISTOR FIXED METAL-FILM 10K +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/115	RESISTOR FIXED METAL-FILM 56K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/123	RESISTOR FIXED METAL-FILM 120K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/086	RESISTOR FIXED METAL-FILM 3K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Power supply board AR1/1 (contd.)

R26	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/054	RESISTOR FIXED METAL-FILM 160R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24772/096	RESISTOR FIXED METAL-FILM 9K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/096	RESISTOR FIXED METAL-FILM 9K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/082	RESISTOR FIXED METAL-FILM 2K4 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	25711/640	RESISTOR VARIABLE CERMET LINEAR, 5K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, HORIZONTAL-PCB,
R47	25711/639	RESISTOR VARIABLE CERMET LINEAR, 2K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, HORIZONTAL-PCB,
R48	24573/073	RESISTOR FIXED METAL-OXIDE 1K +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R49	24573/073	RESISTOR FIXED METAL-OXIDE 1K +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R51	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R57	24772/027	RESISTOR FIXED METAL-FILM 12R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R58(SIC)	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R60	24772/108	RESISTOR FIXED METAL-FILM 30K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R61	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R62	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Power supply board AR1/1 (contd.)

Cir. Ref.	MI part number	Description
R64	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R65	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R66	24773/281	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R67	25748/585	RESISTOR VARIABLE CERMET LINEAR, 5K 10% 250mW 200V 100 ppm/DEG.C, MULTI-TURN, VERTICAL-PCB, 0.25in
RLA	23486/157	RELAY MAGNETIC, SINGLE-POLE CHANGEOVER, 12V COIL, 270R - CONTACTS 10A @ 24VDC, 10A @ 250VAC, PCB
SKC	23435/990	CONNECTOR SHORTING, SOCKET, 2 WAY, FOR 0.64mm SQ PINS, 2.54mm PITCH, 9.6mm HIGH, FREE MOUNTING,
SKD	23435/990	CONNECTOR SHORTING, SOCKET, 2 WAY, FOR 0.64mm SQ PINS, 2.54mm PITCH, 9.6mm HIGH, FREE MOUNTING,
T1	43590/149	WOUND-PART TRANSFORMER, POT-CORE, RM10, 5+5:8+8:3.5+3.5 TURNS, BIFILAR WOUND, MARKER
T2	43590/150	WOUND-PART TRANSFORMER, CURRENT SENSE, POT-CORE, RM7, 400:1 TURNS, LABELLED.
T3	43590/151	WOUND-PART TRANSFORMER, RING-CORE, 8:8 TURNS, TWISTED BIFILAR WOUND, MOUNTED ON TRANSISTOR MTG
TR1	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR2	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR3	28455/421	TRANSISTOR NPN BIPOLAR BC237A.... 45V 150MHz 200mW 100mA 170hFE @ 2mA, TO-92, (LOOSE).
TR4	28455/421	TRANSISTOR NPN BIPOLAR BC237A.... 45V 150MHz 200mW 100mA 170hFE @ 2mA, TO-92, (LOOSE).
TR5	28435/868	TRANSISTOR PNP BIPOLAR 2N2905A.... 60V 200MHz 600mW 600mA 100hFE @ 150mA, TO-39.
TR6	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR7	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR8	28455/421	TRANSISTOR NPN BIPOLAR BC237A.... 45V 150MHz 200mW 100mA 170hFE @ 2mA, TO-92, (LOOSE).
TR9	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR11	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR12	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.

Cir. Ref.	MI part number	Description

Power supply board AR1/1 (contd.)

TR13	28459/069	TRANSISTOR N-CHANNEL-ENHANCE MOSFET IRF540.... 100V 125W 27A 0R085 TO-220.
TR14	28435/227	TRANSISTOR PNP BIPOLAR BC307A OR B... 45V 130MHz 200mW 100mA 180hFE @ 2mA, TO-92, (LOOSE).
TR15	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR16	28459/069	TRANSISTOR N-CHANNEL-ENHANCE MOSFET IRF540.... 100V 125W 27A 0R085 TO-220.
TR18	28455/421	TRANSISTOR NPN BIPOLAR BC237A.... 45V 150MHz 200mW 100mA 170hFE @ 2mA, TO-92, (LOOSE).
TR19	28455/421	TRANSISTOR NPN BIPOLAR BC237A.... 45V 150MHz 200mW 100mA 170hFE @ 2mA, TO-92, (LOOSE).

DC filter board AR4

When ordering, prefix circuit reference with AR4.

	44829/508	Complete unit
C1	26582/424	CAPACITOR FIXED POLYESTER 6.8uF +/-10% 63V RADIAL, 22.5mm PWP, (LOOSE).
C2	26582/418	CAPACITOR FIXED POLYESTER 2.2uF +/-10% 63V RADIAL, 15.2mm PWP, (LOOSE).
C3	26582/418	CAPACITOR FIXED POLYESTER 2.2uF +/-10% 63V RADIAL, 15.2mm PWP, (LOOSE).
C4	26582/418	CAPACITOR FIXED POLYESTER 2.2uF +/-10% 63V RADIAL, 15.2mm PWP, (LOOSE).
C5	26582/418	CAPACITOR FIXED POLYESTER 2.2uF +/-10% 63V RADIAL, 15.2mm PWP, (LOOSE).
L1	44290/958	WOUND-PART INDUCTOR, RING-CORE, 18 TURNS, UNMOUNTED.
L2	44290/958	WOUND-PART INDUCTOR, RING-CORE, 18 TURNS, UNMOUNTED.

Cir. Ref.	MI part number	Description

CRT base board AT2

When ordering, prefix circuit reference with AT2.

Cir. Ref.	MI part number	Description
	44829/520	Complete unit
R1	24331/201	RESISTOR FIXED CARBON-COMPOSITION 330R +/- 5% 500mW 350V AXIAL, (LOOSE OR TAPED).
R2	24331/202	RESISTOR FIXED CARBON-COMPOSITION 1K5 +/- 5% 500mW 350V AXIAL, (TAPED).
R3	24331/203	RESISTOR FIXED CARBON-COMPOSITION 22K +/- 5% 500mW 350V AXIAL, (LOOSE OR TAPED).
R4	24331/203	RESISTOR FIXED CARBON-COMPOSITION 22K +/- 5% 500mW 350V AXIAL, (LOOSE OR TAPED).
SKA	28238/101	CONNECTOR VALVE, SOCKET, 7 WAY, CRT-B7G BASE, PCB MOUNTING, UNSKIRTED.

Cir. Ref.	MI part number	Description

Receiver tray assembly (Option 1 only) RX1

When ordering, prefix circuit reference with RX1.

	44990/879	Complete unit
C1	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C2	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C3	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C4	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C5	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C6	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C7	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C8	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C9	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C10	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C11	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C12	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C13	23642/921	FILTER RFI-SUPPRESSION, 22nF MIN, 100V DC, 10A RATING, FEED-THROUGH, CERAMIC, PI-CIRCUIT,
C14	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C15	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C16	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C17	26397/205	FILTER RFI-SUPPRESSION, 1.5nF MIN, 350V DC, FEED-THROUGH, CERAMIC, PI-CIRCUIT, SOLDER-IN.
C18	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C19	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
PLB	23444/382	CONNECTOR-RF SMC-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
PLC	23444/383	CONNECTOR-RF SMC-TYPE MALE, RECEPTACLE, 50 OHMS, ELBOW, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING,
SKA	23444/505	CONNECTOR-RF SMA-TYPE FEMALE, JACK, 50 OHMS, ELBOW, FLANGED, SOLDER-BUCKET, 12.7mm SQUARE

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11

When ordering, prefix circuit reference with RX11.

Cir. Ref.	MI part number	Description
	44829/561	Complete unit
C1	26386/887	CAPACITOR FIXED CERAMIC 100nF +/-10% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C2	26386/887	CAPACITOR FIXED CERAMIC 100nF +/-10% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C3	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C4	26386/887	CAPACITOR FIXED CERAMIC 100nF +/-10% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C5	26386/887	CAPACITOR FIXED CERAMIC 100nF +/-10% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C6	26386/887	CAPACITOR FIXED CERAMIC 100nF +/-10% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C7	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26343/490	CAPACITOR FIXED CERAMIC 1.8pF +/-0.25pF 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C9	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C10	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C11	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C12	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C13	26343/431	CAPACITOR FIXED CERAMIC 82pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C14	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C15	26847/098	CAPACITOR VARIABLE CERAMIC 3.5pF to 10pF 100V NPO, VERTICAL-PCB MOUNT, 5mm DIA, 3.5mm LONG, 5mm PWP,
C16	26343/754	CAPACITOR FIXED CERAMIC 1.2pF +/-0.5pF 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C17	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C18	26847/098	CAPACITOR VARIABLE CERAMIC 3.5pF to 10pF 100V NPO, VERTICAL-PCB MOUNT, 5mm DIA, 3.5mm LONG, 5mm PWP,
C19	26343/498	CAPACITOR FIXED CERAMIC 18pF +/-2% 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C20	26343/788	CAPACITOR FIXED CERAMIC 680pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C21	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C22	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C25	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C26	26343/431	CAPACITOR FIXED CERAMIC 82pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C27	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

C28	26847/098	CAPACITOR VARIABLE CERAMIC 3.5pF to 10pF 100V NP0, VERTICAL-PCB MOUNT, 5mm DIA, 3.5mm LONG, 5mm PWP,
C29	26343/754	CAPACITOR FIXED CERAMIC 1.2pF +/-0.5pF 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C30	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C31	26847/098	CAPACITOR VARIABLE CERAMIC 3.5pF to 10pF 100V NP0, VERTICAL-PCB MOUNT, 5mm DIA, 3.5mm LONG, 5mm PWP,
C32	26343/498	CAPACITOR FIXED CERAMIC 18pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C33	26343/788	CAPACITOR FIXED CERAMIC 680pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C34	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C35	26343/490	CAPACITOR FIXED CERAMIC 1.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C36	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C37	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C38	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C39	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C40	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C41	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C42	26343/490	CAPACITOR FIXED CERAMIC 1.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C43	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C44	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C45	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C46	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C47	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C48	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C49	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C50	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C51	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C52	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C53	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C54	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C55	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

Cir. Ref.	MI part number	Description
C56	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C57	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C58	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C59	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C60	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C61	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C62	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C63	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C64	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C65	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C66	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C67	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C68	26582/427	CAPACITOR FIXED POLYESTER 470nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C69	26582/427	CAPACITOR FIXED POLYESTER 470nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C70	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C71	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C72	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG C, RADIAL, 5mm PWP, (TAPED).
C73	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C74	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C75	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C76	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C77	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C78	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C79	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C80	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C81	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

D1	28383/997	DIODE PIN 5082-3379... 250mW 50V VHF-UHF ATTENUATOR, AXIAL, HP-OUTLINE-15, (TAPED).
D2	28383/997	DIODE PIN 5082-3379... 250mW 50V VHF-UHF ATTENUATOR, AXIAL, HP-OUTLINE-15, (TAPED).
D3	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D4	28383/997	DIODE PIN 5082-3379... 250mW 50V VHF-UHF ATTENUATOR, AXIAL, HP-OUTLINE-15, (TAPED).
D5	28335/675	DIODE GENERAL-PURPOSE BA482... 35V 100mA 1.2Vf @ 100mA AXIAL, DO-34, (TAPED).
D6	28383/997	DIODE PIN 5082-3379... 250mW 50V VHF-UHF ATTENUATOR, AXIAL, HP-OUTLINE-15, (TAPED).
D7	44529/057	DIODES MATCHED PAIR
D8	44529/057	DIODES MATCHED PAIR
D9	28371/494	DIODE ZENER 1N825... 250mW 6.2V 5% 50mA 20ppm/DEG.C, AXIAL, DO-35, (TAPED).
D10	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D11	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D12	28336/676	DIODE GENERAL-PURPOSE 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D13	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D14	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D15	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D16	28357/028	DIODE RECTIFIER 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
IC1	28461/415	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0385... CASCADABLE BIPOLAR, 4.0GHz, MONOLITHIC, 4 PIN,
IC2	28461/410	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0485... CASCADABLE BIPOLAR, 3.6GHz, MONOLITHIC, 4 PIN,
IC3	28531/007	RF-MIXER DOUBLE-BALANCED, DIODE RING, SRA220.. 0.05-2000MHz, 50R 1 dBm RF-1dB COMPRESS, 6 dB
IC4	23642/942	FILTER CRYSTAL, PCB-MOUNT, 21.4MHz, LINEAR-PHASE, 3dB PASSBAND 5KHz, 60dB STOPBAND 40KHz, 4dB MAX
IC5	28461/414	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0885... CASCADABLE BIPOLAR, 6.0GHz, MONOLITHIC, 4 PIN,
IC6	28461/408	IC ANALOGUE WIDEBAND-AMPLIFIER MC1350P... SINGLE, 12V WITH AGC CONTROL, 8 PIN, DUAL-IN-LINE.
IC7	28461/414	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0885... CASCADABLE BIPOLAR, 6.0GHz, MONOLITHIC, 4 PIN,
IC8	28461/415	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0385... CASCADABLE BIPOLAR, 4.0GHz, MONOLITHIC, 4 PIN,
IC9	28461/378	IC ANALOGUE OPERATIONAL AMP TL074BCN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC10	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN .. QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

IC11	28461/980	IC ANALOGUE TEMPERATURE-SENSOR LM35DZ... 30V +/-1.5 DEG.C VOLTAGE PROPORTIONAL, MONOLITHIC, 3
L1	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L2	44291/009	WOUND-PART INDUCTOR, 1.6uH, RING-CORE, 10 TURNS, UNMOUNTED, VARNISHED.
L3	23642/563	INDUCTOR FIXED 220uH +/- 10% COATED-LACQUER, MINIATURE, 110mA 17R MAX, 45 Q @ 0.79 MHz, 4.2 MHz
L4	44291/009	WOUND-PART INDUCTOR, 1.6uH, RING-CORE, 10 TURNS, UNMOUNTED, VARNISHED.
L5	34901/046	WOUND-PART INDUCTOR, 0.08uH, AIR-CORE, 2.4mm I/DIA, 7.5 TURNS, CLOSE WOUND.
L6	44291/006	WOUND-PART INDUCTOR, 503nH, AIR-CORE, ON M4 x 0.5mm FORMER, 3.25:12.25 TURNS.
L7	44291/007	WOUND-PART INDUCTOR, 503nH, AIR-CORE, ON M4 x 0.5mm FORMER, 15.75 TURNS.
L8	44291/006	WOUND-PART INDUCTOR, 503nH, AIR-CORE, ON M4 x 0.5mm FORMER, 3.25:12.25 TURNS.
L9	44291/007	WOUND-PART INDUCTOR, 503nH, AIR-CORE, ON M4 x 0.5mm FORMER, 15.75 TURNS.
L10	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L11	23642/932	INDUCTOR VARIABLE 0.38uH NOM, UNSCREENED, 2 PIN, 7.5mm SQUARE PCB MOUNT BASE, Q>80 @ 45MHz,
L12	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L13	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L14	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L15	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L16	23642/933	INDUCTOR VARIABLE 0.17uH NOM, UNSCREENED, 2 PIN, 7.5mm SQUARE PCB MOUNT BASE, 5.5 TURN COIL,
L17	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L18	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L19	23642/933	INDUCTOR VARIABLE 0.17uH NOM, UNSCREENED, 2 PIN, 7.5mm SQUARE PCB MOUNT BASE, 5.5 TURN COIL,
L20	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L21	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L22	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

Cir. Ref.	MI part number	Description
PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLB	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLC	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24321/602	RESISTOR FIXED METAL-GLAZE 95R3 +/- 1% 250mW 200V 100 ppm/DEG.C, SURFACE MOUNTED, SIZE 1210, (LOOSE
R2	24321/603	RESISTOR FIXED METAL-GLAZE 71R5 +/- 1% 250mW 200V 100 ppm/DEG.C, SURFACE MOUNTED, SIZE 1210, (LOOSE
R3	24321/602	RESISTOR FIXED METAL-GLAZE 95R3 +/- 1% 250mW 200V 100 ppm/DEG.C, SURFACE MOUNTED, SIZE 1210, (LOOSE
R4	24573/056	RESISTOR FIXED METAL-OXIDE 200R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R5	24573/051	RESISTOR FIXED METAL-OXIDE 120R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R6	24321/600	RESISTOR FIXED METAL-GLAZE 294R +/- 1% 125mW 200V 100 ppm/DEG.C, SURFACE MOUNTED, SIZE 1206, (LOOSE
R7	24321/601	RESISTOR FIXED METAL-GLAZE 17R8 +/- 1% 125mW 200V 100 ppm/DEG.C, SURFACE MOUNTED, SIZE 1206, (LOOSE
R8	24321/600	RESISTOR FIXED METAL-GLAZE 294R +/- 1% 125mW 200V 100 ppm/DEG.C, SURFACE MOUNTED, SIZE 1206, (LOOSE
R9	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/084	RESISTOR FIXED METAL-FILM 3K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/076	RESISTOR FIXED METAL-FILM 1K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/044	RESISTOR FIXED METAL-FILM 62R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/047	RESISTOR FIXED METAL-FILM 82R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/031	RESISTOR FIXED METAL-FILM 18R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/079	RESISTOR FIXED METAL-FILM 1K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/045	RESISTOR FIXED METAL-FILM 68R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

R24	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/043	RESISTOR FIXED METAL-FILM 56R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/046	RESISTOR FIXED METAL-FILM 75R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R27	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/046	RESISTOR FIXED METAL-FILM 75R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R29	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R30	24772/059	RESISTOR FIXED METAL-FILM 270R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24772/041	RESISTOR FIXED METAL-FILM 47R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/040	RESISTOR FIXED METAL-FILM 43R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R37	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R40	24772/063	RESISTOR FIXED METAL-FILM 390R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24573/051	RESISTOR FIXED METAL-OXIDE 120R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24723/397	RESISTOR FIXED METAL-FILM 300R +/- 0.1% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R45	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	24573/051	RESISTOR FIXED METAL-OXIDE 120R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R47	24573/053	RESISTOR FIXED METAL-OXIDE 150R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R48	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R49	24772/055	RESISTOR FIXED METAL-FILM 180R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

R50	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R53	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R54	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R55	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R56	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R57	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R58	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R59	25711/639	RESISTOR VARIABLE CERMET LINEAR, 2K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, HORIZONTAL-PCB,
R60	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R61	24723/404	RESISTOR FIXED METAL-FILM 320K +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R62	24723/373	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (TAPED).
R63(SIC)	24753/213	RESISTOR FIXED METAL-FILM 300K +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R64	24723/373	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (TAPED).
R65	24723/306	RESISTOR FIXED METAL-FILM 1K +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (TAPED).
R66	24723/373	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (TAPED).
R67	24723/373	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (TAPED).
R68	24723/397	RESISTOR FIXED METAL-FILM 300R +/- 0.1% 250mW 200V 25 ppm/DEG C, AXIAL, (LOOSE OR TAPED).
R69	24723/373	RESISTOR FIXED METAL-FILM 10K +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (TAPED).
R70	24732/261	RESISTOR FIXED METAL-FILM 59K +/- 0.25% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R71	24723/397	RESISTOR FIXED METAL-FILM 300R +/- 0.1% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R72	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R73	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R74	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R75	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R76	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R77	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

R78	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R79	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R80	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R81	24772/059	RESISTOR FIXED METAL-FILM 270R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R82	24772/058	RESISTOR FIXED METAL-FILM 240R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R83	24772/058	RESISTOR FIXED METAL-FILM 240R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R84	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R85	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R86	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R87	25711/638	RESISTOR VARIABLE CERMET LINEAR, 1K 10% 500mW 200V 150 ppm/DEG.C, SINGLE-TURN, HORIZONTAL-PCB,
RLA	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLB	23486/513	RELAY REED, SINGLE-POLE N/O, CO-AXIAL, 5V COIL, 230R - CONTACTS 0.5A, 200V, DC-1200MHz, PCB
RLC	23486/513	RELAY REED, SINGLE-POLE N/O, CO-AXIAL, 5V COIL, 230R - CONTACTS 0.5A, 200V, DC-1200MHz, PCB
SKB	23435/990	CONNECTOR SHORTING, SOCKET, 2 WAY, FOR 0.64mm SQ PINS, 2.54mm PITCH, 9.6mm HIGH, FREE MOUNTING,
T1	44291/008	WOUND-PART TRANSFORMER, IMPEDANCE, RING-CORE, 24+24 TURNS, TWISTED BIFILAR WOUND, UNMOUNTED.
T2	44291/008	WOUND-PART TRANSFORMER, IMPEDANCE, RING-CORE, 24+24 TURNS, TWISTED BIFILAR WOUND, UNMOUNTED.
TP1	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
TP2	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER

Cir. Ref.	MI part number	Description

Sensitive receiver board (Option 1 only) RX11 (contd.)

TR1	28451/694	TRANSISTOR NPN BIPOLAR BFR91A.... 12V 6GHz 300mW 35mA 40hFE @ 30mA, SURFACE MOUNTED, SOT-37.
TR2	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR3	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR4	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR5	28434/827	TRANSISTOR PNP BIPOLAR MPS6534.... 40V 250MHz 625mW 600mA 90hFE @ 100mA, TO-92, (LOOSE).
TR6	28434/827	TRANSISTOR PNP BIPOLAR MPS6534.... 40V 250MHz 625mW 600mA 90hFE @ 100mA, TO-92, (LOOSE).
TR7	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR8	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR9	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR10	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR11	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR12	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR13	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).
TR14	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR15	28435/225	TRANSISTOR PNP BIPOLAR ZTX750.... 45V 100MHz 1W 2A 100hFE @ 500mA, TO-92, (TAPED EMITR FIRST).

Cir. Ref.	MI part number	Description

Local oscillator driver board (Option 1 only) RX12

When ordering, prefix circuit reference with RX12.

Cir. Ref.	MI part number	Description
	44829/594	Complete unit
C1	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C2	26343/446	CAPACITOR FIXED CERAMIC 180pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C3	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C4	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C5	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C6	26386/756	CAPACITOR FIXED CERAMIC 39nF +/-20% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C7	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C8	26386/756	CAPACITOR FIXED CERAMIC 39nF +/-20% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C9	26386/756	CAPACITOR FIXED CERAMIC 39nF +/-20% 50V X7R MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C10	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
IC1	28461/410	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0485... 3dB PASSBAND 5KHz, 60dB STOPBAND 40KHz, 4dB MAX
L1	23642/932	INDUCTOR VARIABLE 0.38uH NOM, UNSCREENED, 2 PIN, 7.5mm SQUARE PCB MOUNT BASE, Q>80 @ 45MHz,
L2	23642/933	INDUCTOR VARIABLE 0.17uH NOM, UNSCREENED, 2 PIN, 7.5mm SQUARE PCB MOUNT BASE, 5.5 TURN COIL,
L3	23642/933	INDUCTOR VARIABLE 0.17uH NOM, UNSCREENED, 2 PIN, 7.5mm SQUARE PCB MOUNT BASE, 5.5 TURN COIL,
L4	23642/932	INDUCTOR VARIABLE 0.38uH NOM, UNSCREENED, 2 PIN, 7.5mm SQUARE PCB MOUNT BASE, Q>80 @ 45MHz,
L5	44291/009	WOUND-PART INDUCTOR, 1.6uH, RING-CORE, 10 TURNS, UNMOUNTED, VARNISHED.
L6	23642/563	INDUCTOR FIXED 220uH +/- 10% COATED-LACQUER, MINIATURE, 110mA 17R MAX, 45 Q @ 0.79 MHz, 4.2 MHz
PLA	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24573/051	RESISTOR FIXED METAL-OXIDE 120R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
RLA	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,

Cir. Ref.	MI part number	Description

Attenuator and switch assembly (Option 1 only) RX2

This assembly should not be dismantled.

	44429/037	Complete unit

Bypass switch assembly (Option 1 only) RX3

When ordering, prefix circuit reference with RX3.

	44429/038	Complete unit
SKA	23444/531	CONNECTOR-RF SMA-TYPE FEMALE, RECEPTACLE, 50 OHMS, BULKHEAD, STUB CONTACT, WITHOUT MTG SHOULDR, SPECL
SKB	23444/531	CONNECTOR-RF SMA-TYPE FEMALE, RECEPTACLE, 50 OHMS, BULKHEAD, STUB CONTACT, WITHOUT MTG SHOULDR, SPECL
SKC	23444/531	CONNECTOR-RF SMA-TYPE FEMALE, RECEPTACLE, 50 OHMS, BULKHEAD, STUB CONTACT, WITHOUT MTG SHOULDR, SPECL
SKD	23444/531	CONNECTOR-RF SMA-TYPE FEMALE, RECEPTACLE, 50 OHMS, BULKHEAD, STUB CONTACT, WITHOUT MTG SHOULDR, SPECL

MISCELLANEOUS MECHANICAL PARTS

Item No.	Description		Part Number
	Order without prefix. Item numbers as shown in Fig. 6-1.		
1	Top cover		35907-046
2	Board frame cover		35906-437
3	Board guide (1 of 12)		22324-001
4	Safety cover for AT2		37590-841
5	CRT magnetic shield		35904-561
	Gasket moulding		37590-988
6	CRT strap assembly		41700-687
7	VARIABLE control knob		37591-605
8	CRT bezel		37591-616
9	Lower cover		35907-045
10	Front panel assembly (including front panel, keyboards AF1/2 and AF2/2, plastic key mat and VOLUME, INTENSITY and POSITION controls	(English)	46662/450
		(French)	46662/475
		(Spanish)	46662/474
	Plastic key mat only for AF1/2 and AF2/2 (The front panel is designed to be replaceable as a complete assembly. However, under certain conditions, these parts may be available.)	(English)	B2955KP1982
		(French)	
		(Spanish)	
11	CRT window		37490-707
	CRT screen, mesh		31519-125
12	VOLUME, INTENSITY or POSITION control knob (1 of 4)		37591-610
13	Foot (1 to 4)		37591-593
	Stud, nylon (1 of 4)		37591-461
14	Handle assembly (including handle, bosses, locking rings, springs, screws, washers and buttons)		41590/279
15	RF tray cover (small)		41690-406
16	Side rail (1 of 2)		34902-016
17	RF tray cover (large)		41690-408
18	Safety cover for AC1		37490-749
19	Rear cover		41690-600
	Grommet, blind (1 of 2)		23118-242
	Air filter (1 of 3)		37490-718
20	Rear stand (1 of 2)		37591-590
21	Rear panel		35906-720
	Voltage selector locking plate		35907-211
22	Nut, sheet metal (1 of 8)		35901-352

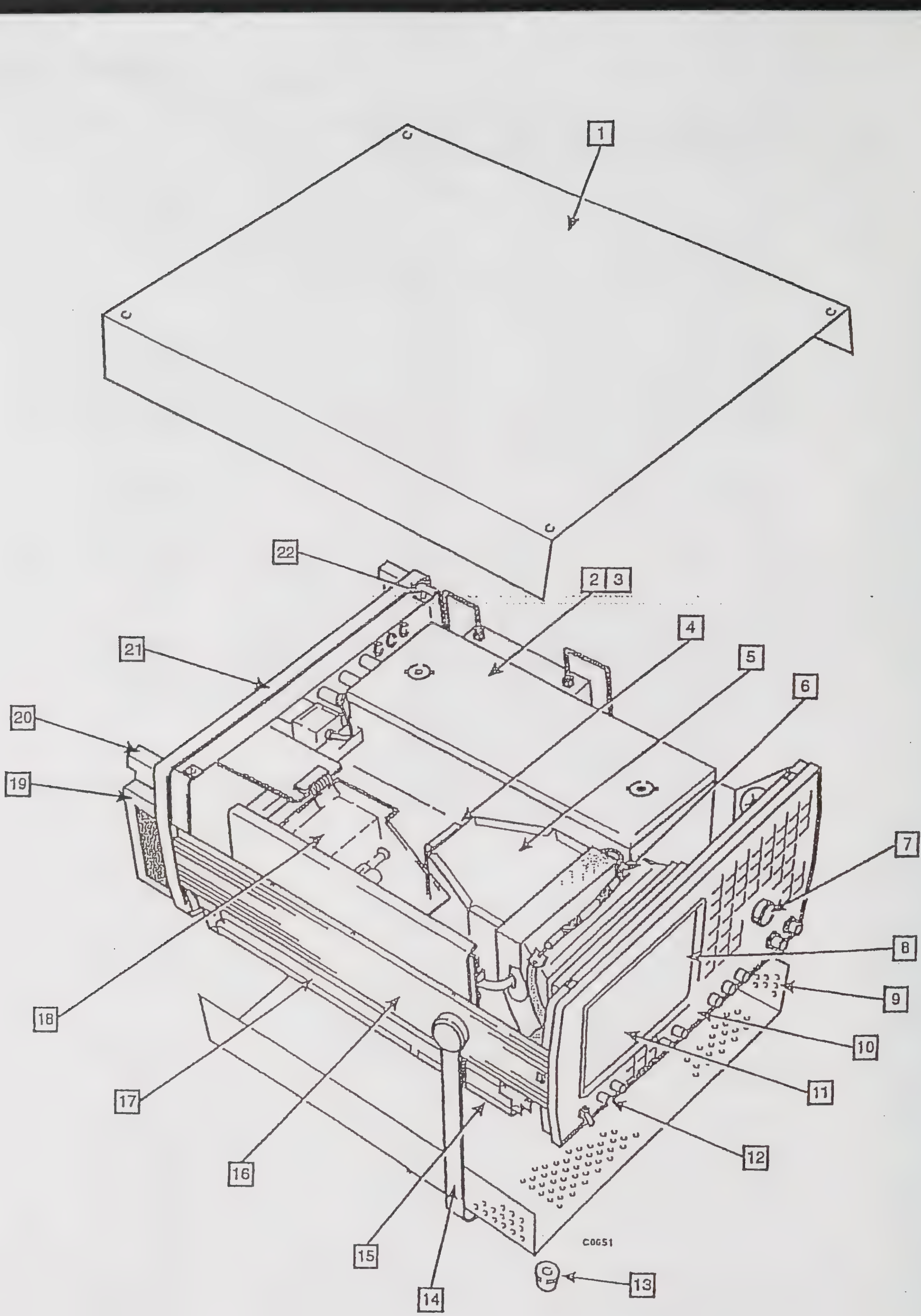


Fig. 6-1 Miscellaneous mechnical parts

Chapter 7

SERVICING DIAGRAMS

Fig. (contd.)	Unit	Part no.	Page

CIRCUIT NOTES

Component values

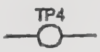
Resistors : R= ohms, k = kilohms, M = megohms.
Capacitor : μ = microfarrads, n = nanofarads, p = picofarads.
Inductors : μ = microhenries, m = millihenries.
SIC = value selected during test, nominal value shown.

Symbols

Symbols are to BS 3939 with the following additions :

 Static sensitive component - see Notes and Cautions, Page iv.

 Tag



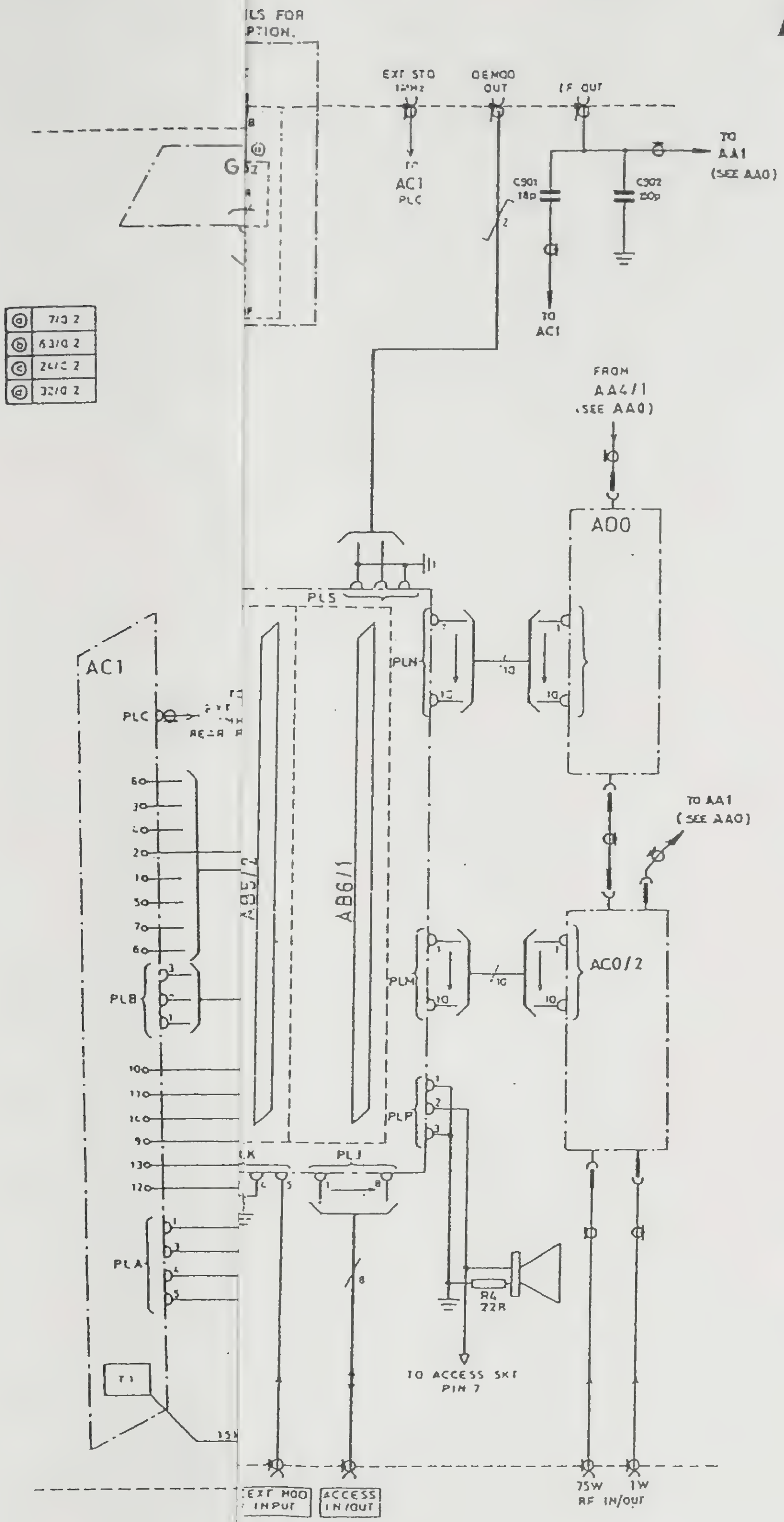
Test point

 Edge connector

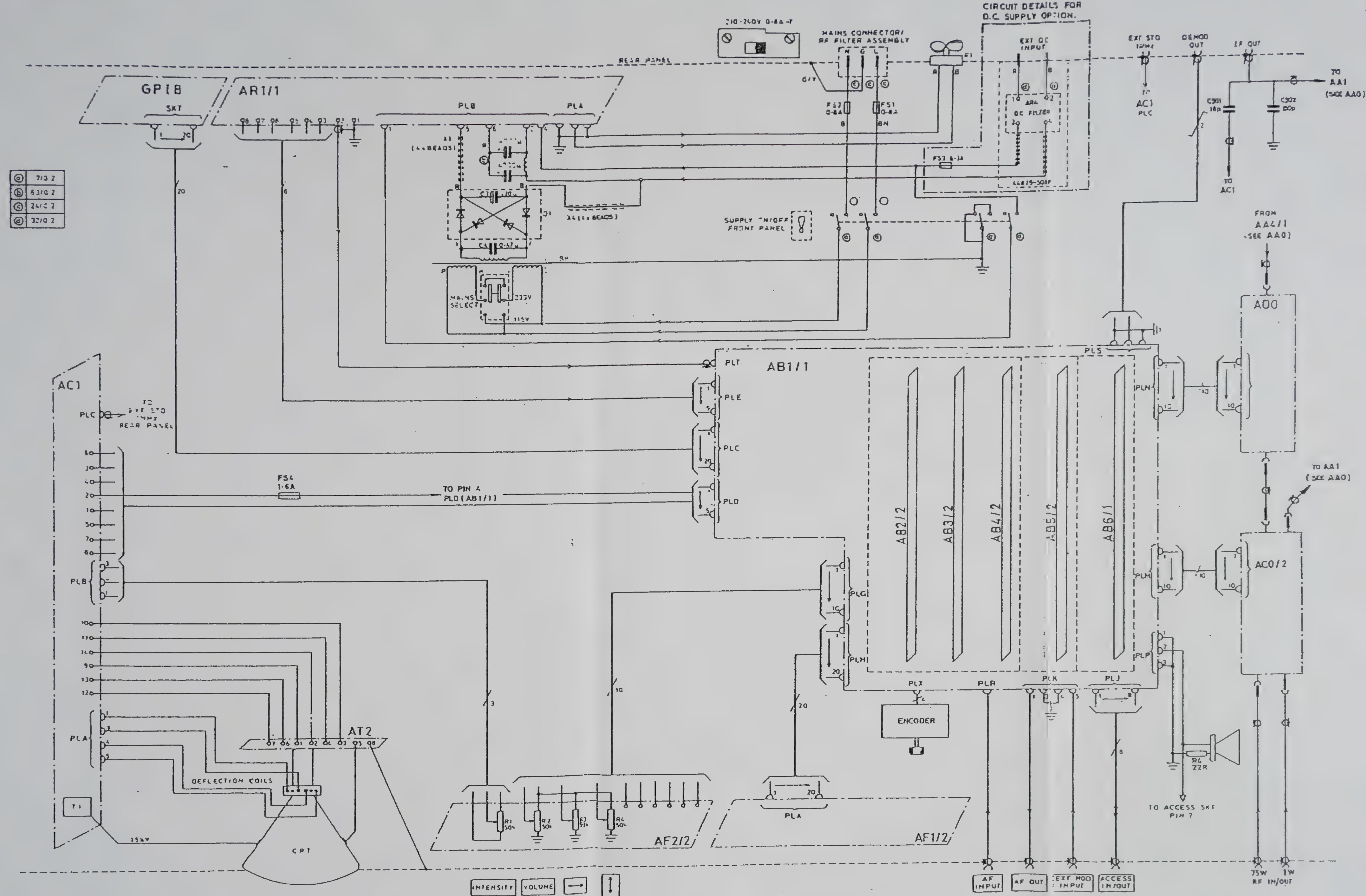
 Ferrite bead

PCB layouts

PCB layout are shown as viewed from the Component side.

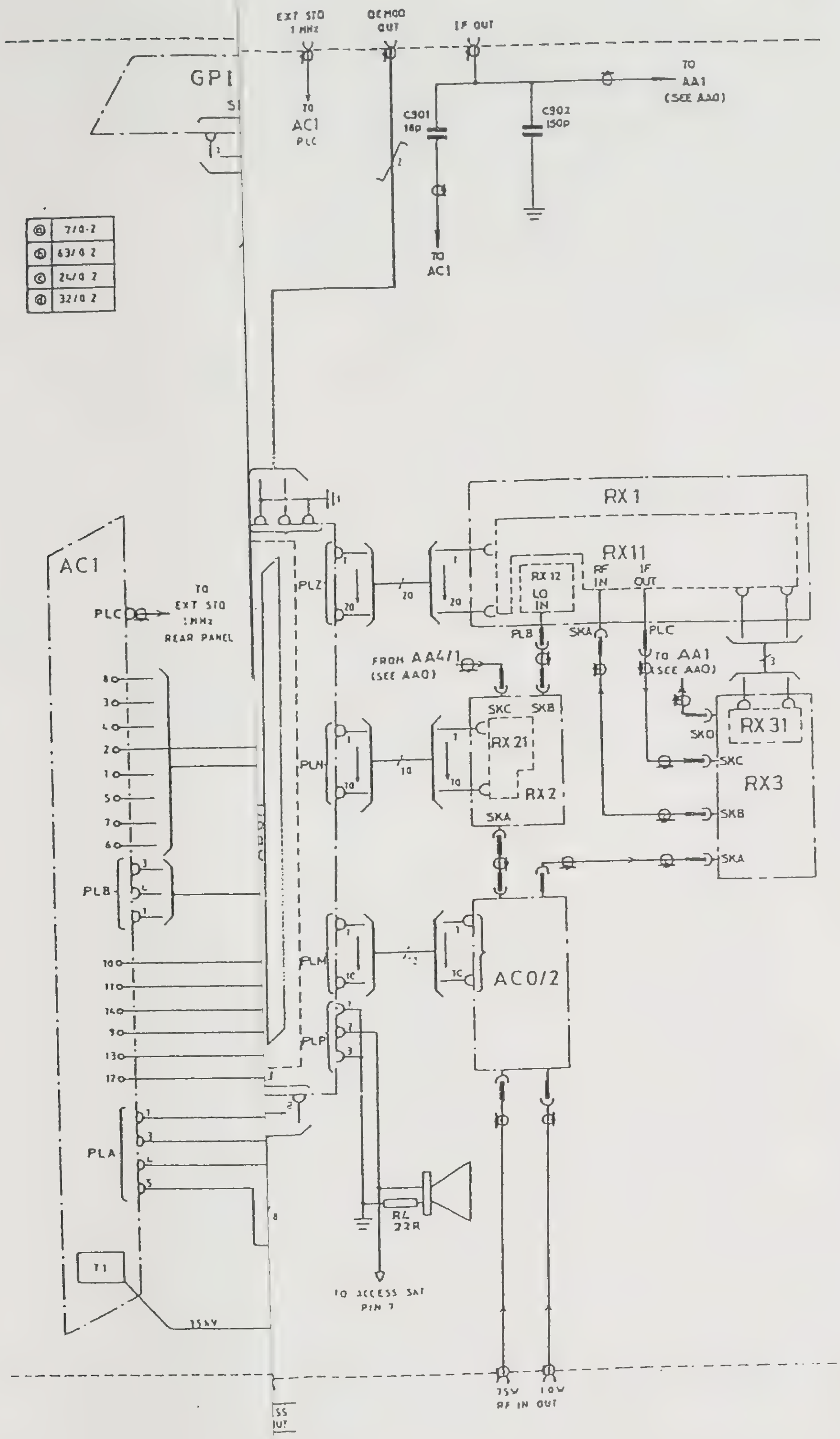


Drg. No. Z 52955/500 Sheet 1 Issu *diagram of Overall assembly (Without Option 1)*



Drg. No. Z 52955/500 Sheet 1 Issue 3

Fig. 7-1 Circuit diagram of Overall assembly (Without Option 1)



Drg. No. Z 52955/S01 Sheet 1 Issuit diagram of Overall assembly (With Option 1)

Overall assembly A0

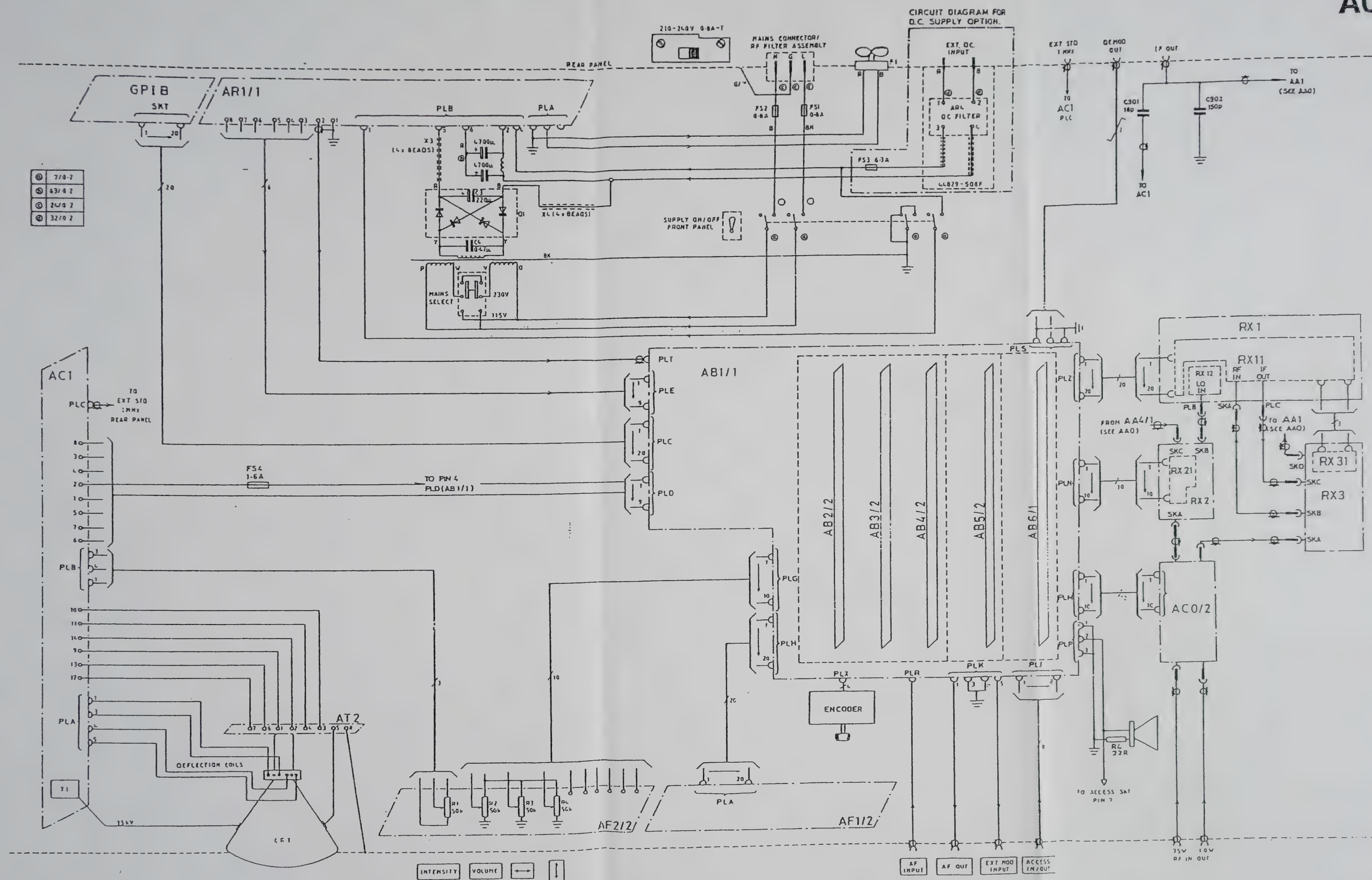


Fig. 7-2 Circuit diagram of Overall assembly (With Option 1)

Drg. No. Z 52955/S01 Sheet 1 Issue 3

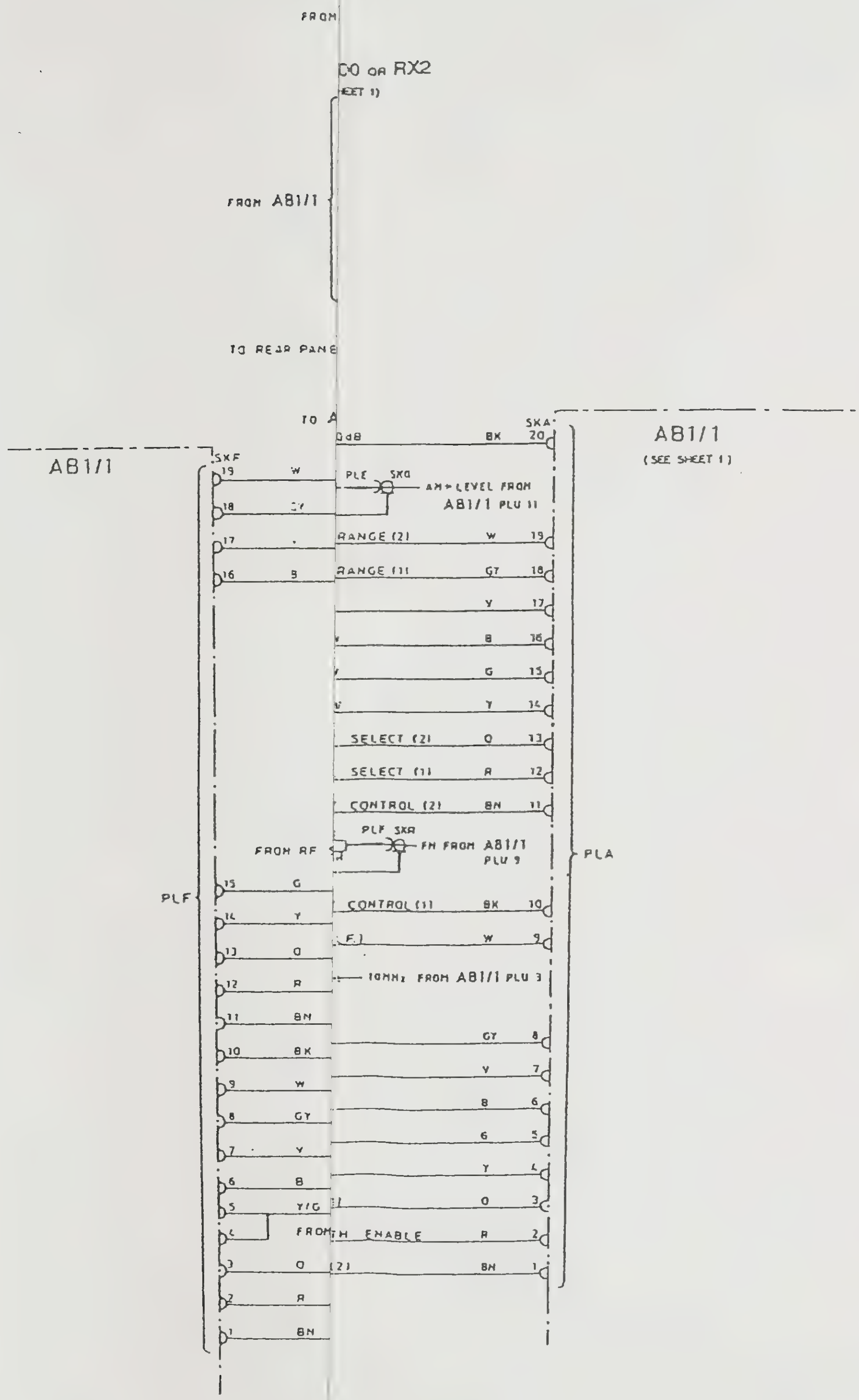


Fig. 7-3 *Circuit diagram of RF tray assembly*

Drg. No. Z 52955/500 Sheet 2 Issue 2

Overall assembly A6

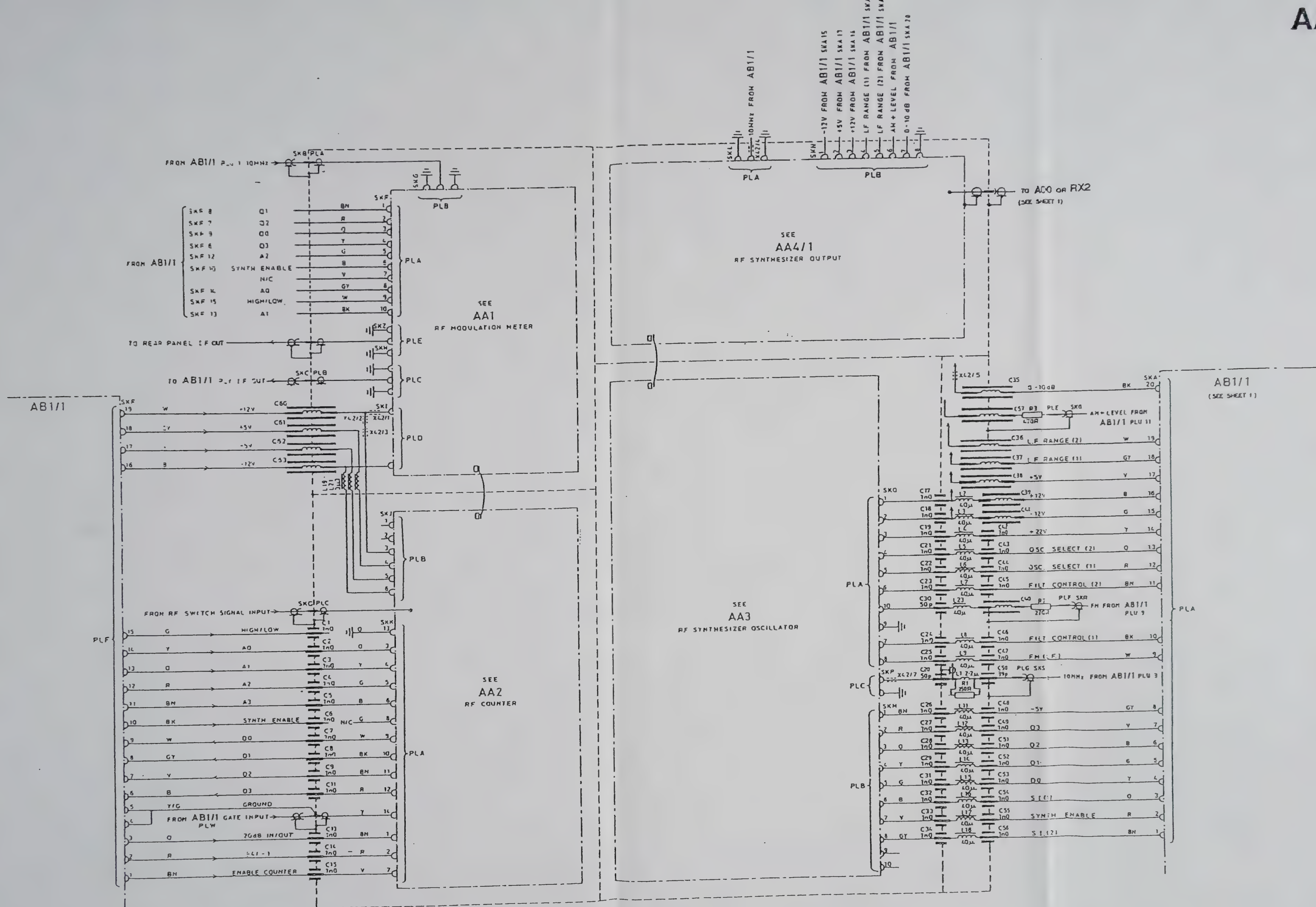
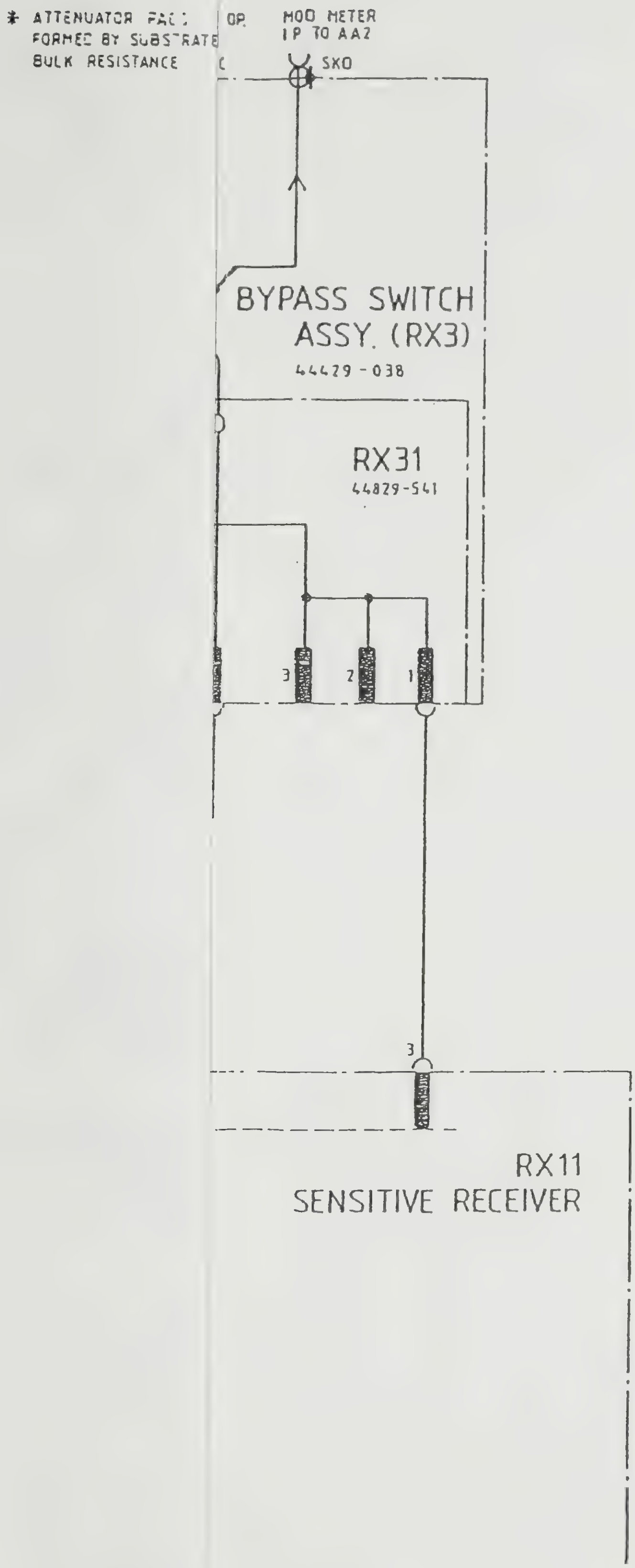


Fig. 7-3 Circuit diagram of RF tray assembly

Drg. No. Z 52955/500 Sheet 2 Issue 2



Drg. No. Z 52955/501 Sheet 3 Issue*t diagram of Attenuator and switches (Option 1)*

RF tray assembly AA0

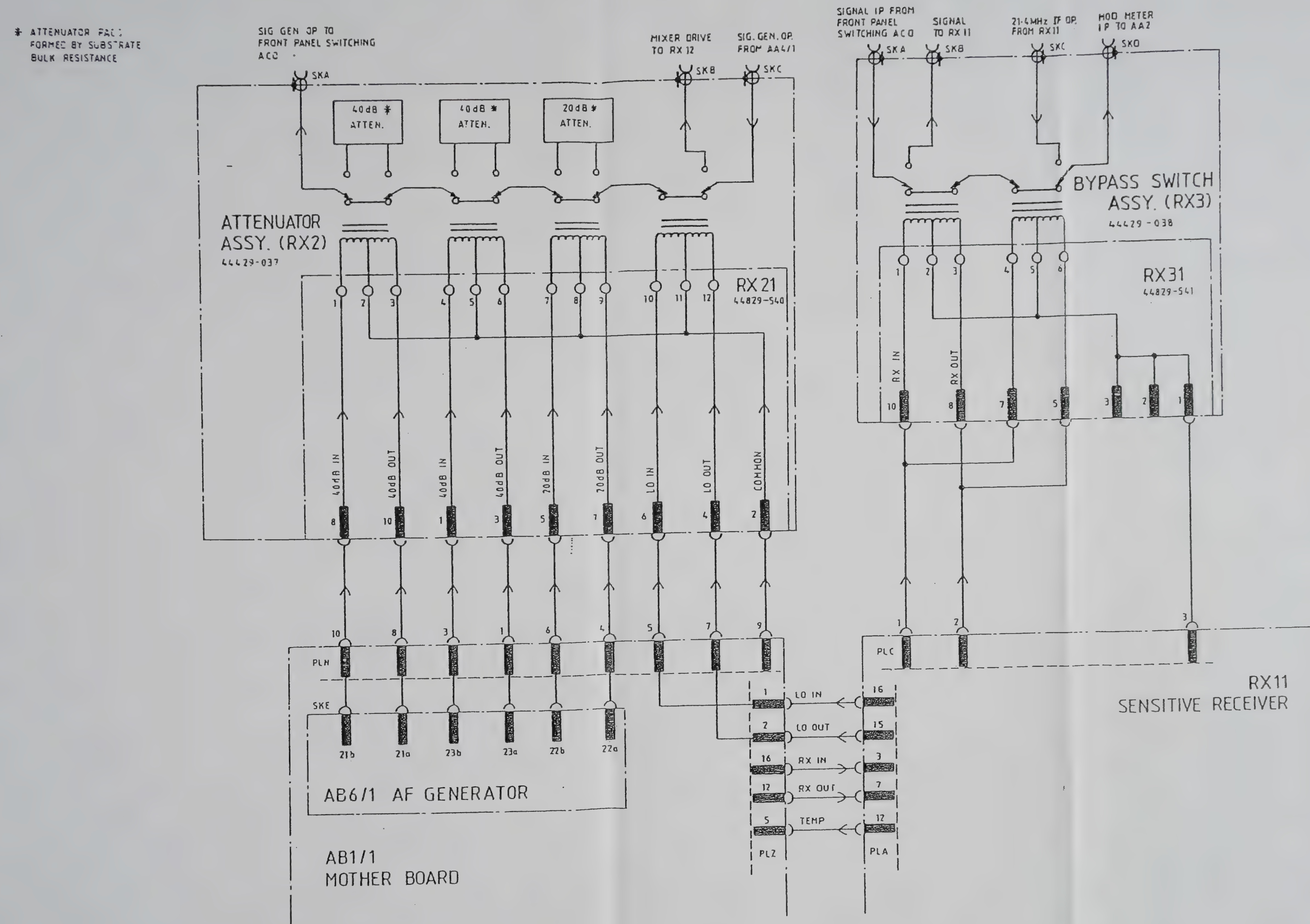


Fig. 7-4 Circuit diagram of Attenuator and switches (Option 1)

Drg. No. Z 52955/501 Sheet 3 Issue 1

AA1

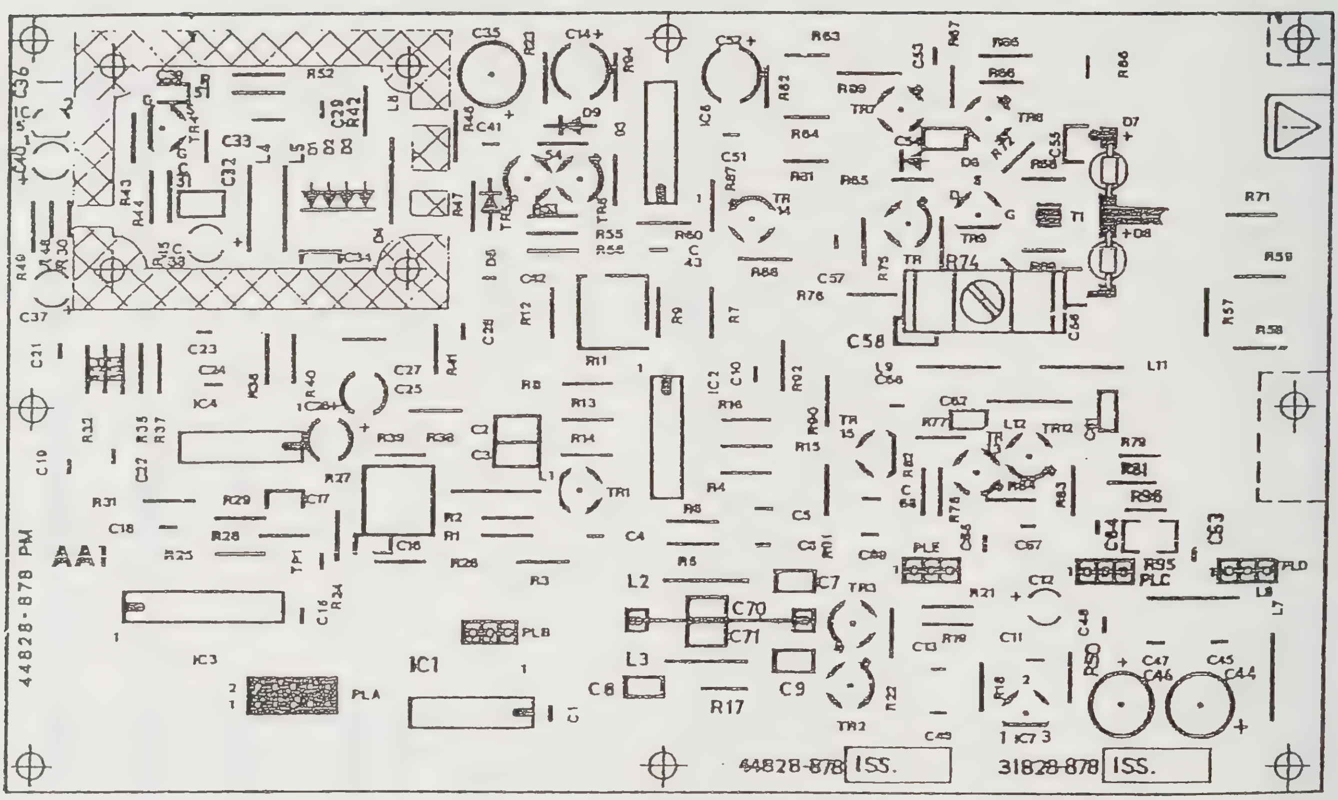
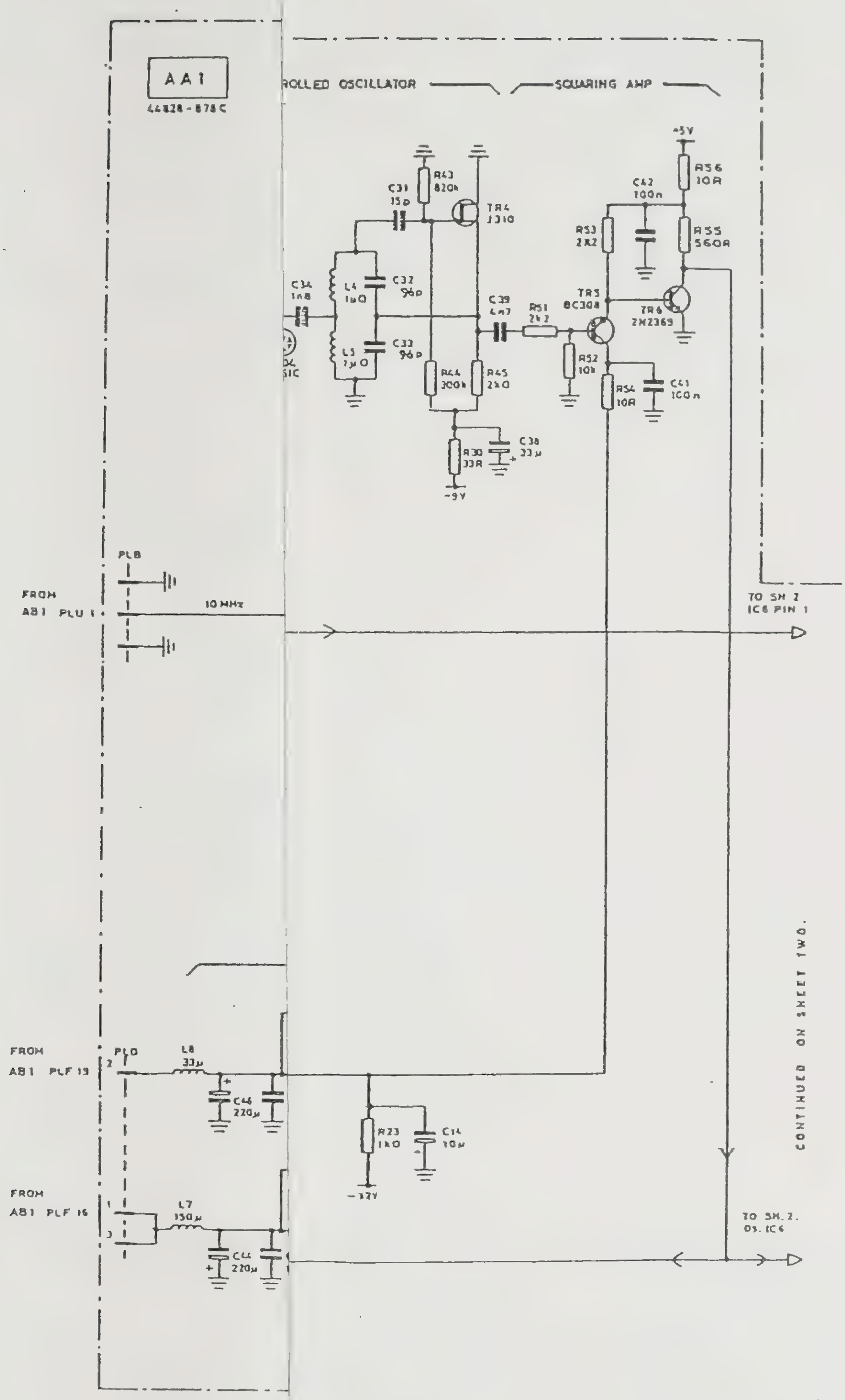


Fig. 7-5 Component layout of RF modulation meter board

Drg. No. 44828/878



Drg. No. Z 44828/878 Sheet 1 Issue

modulation meter board (Oscillator and PLL)

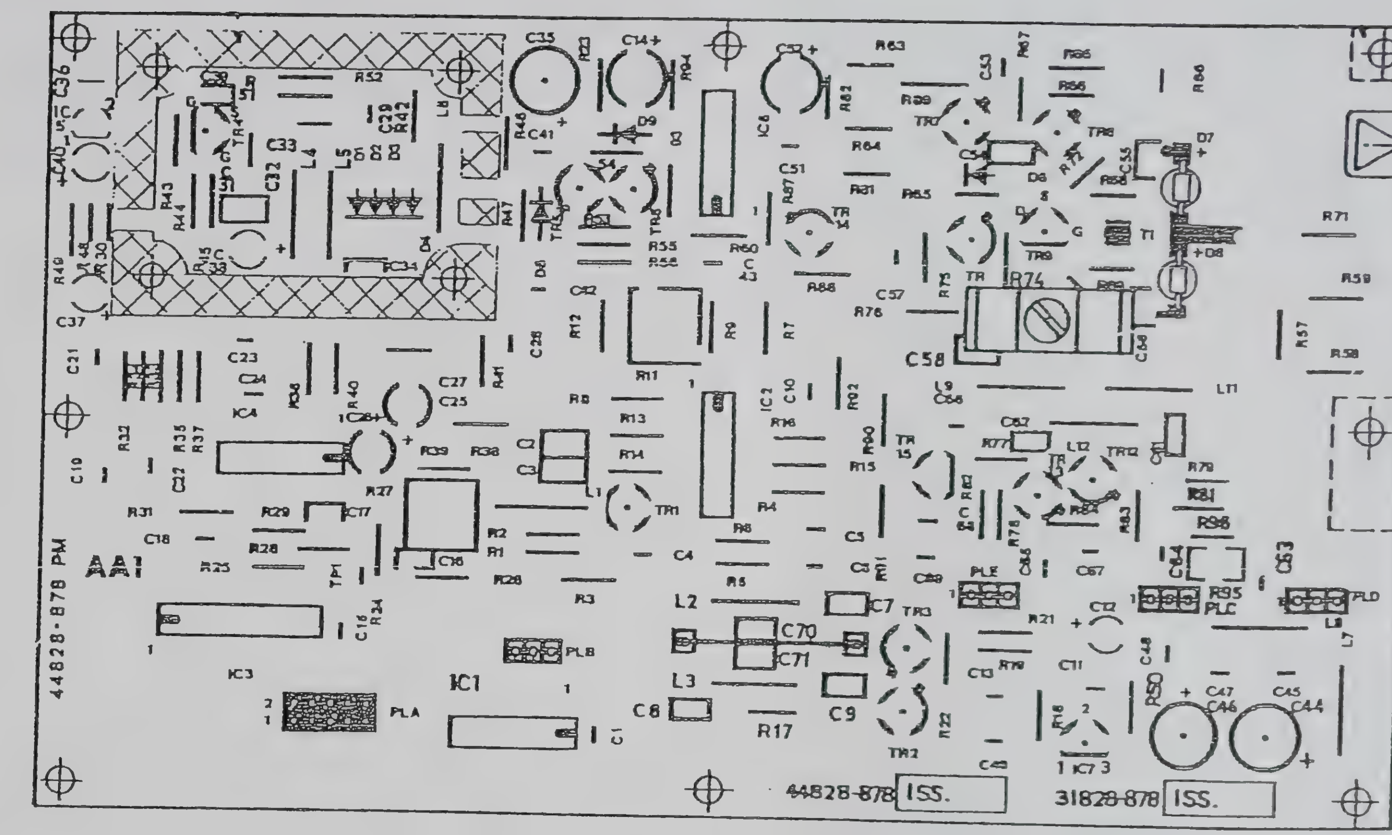
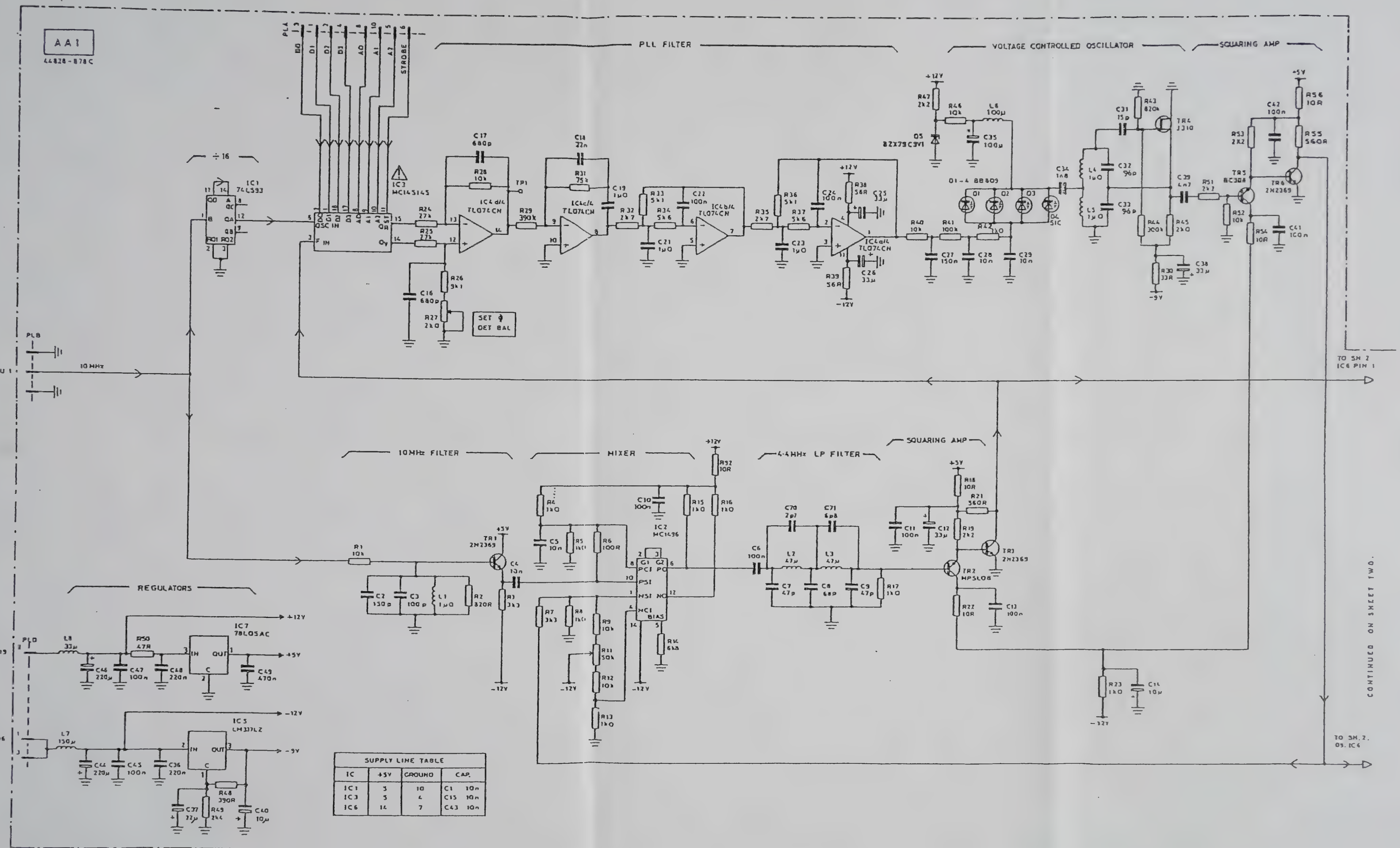


Fig. 7-5 Component layout of RF modulation meter board

Drg. No. 44828/878

Attenuator and switches A0

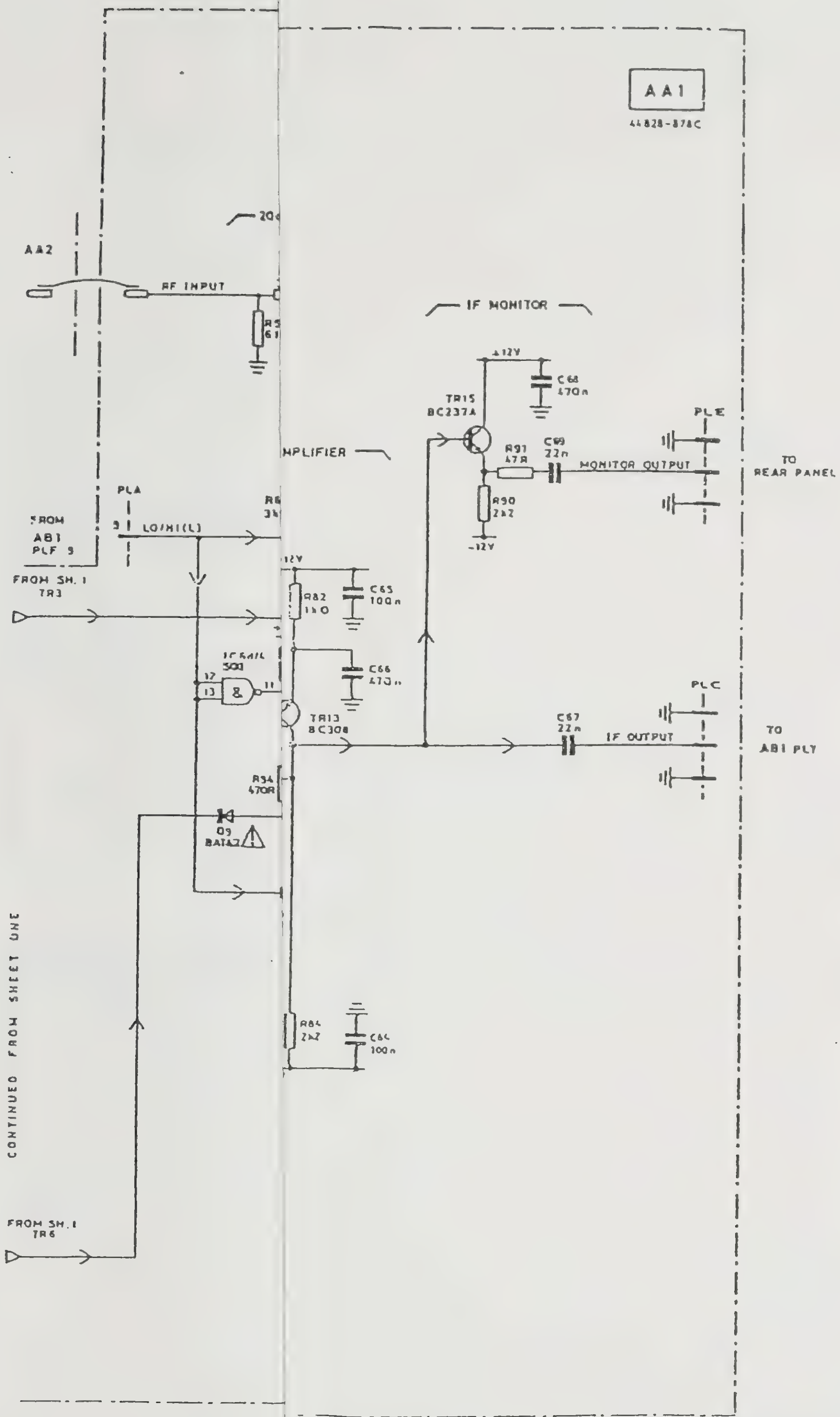


SUPPLY LINE TABLE			
IC	+5V	GROUND	CAP.
IC1	3	10	C1 10n
IC3	5	4	C15 10n
IC6	14	7	C43 10n

⚠ THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE.

Drg. No. Z 44828/878 Sheet 1 Issue 12

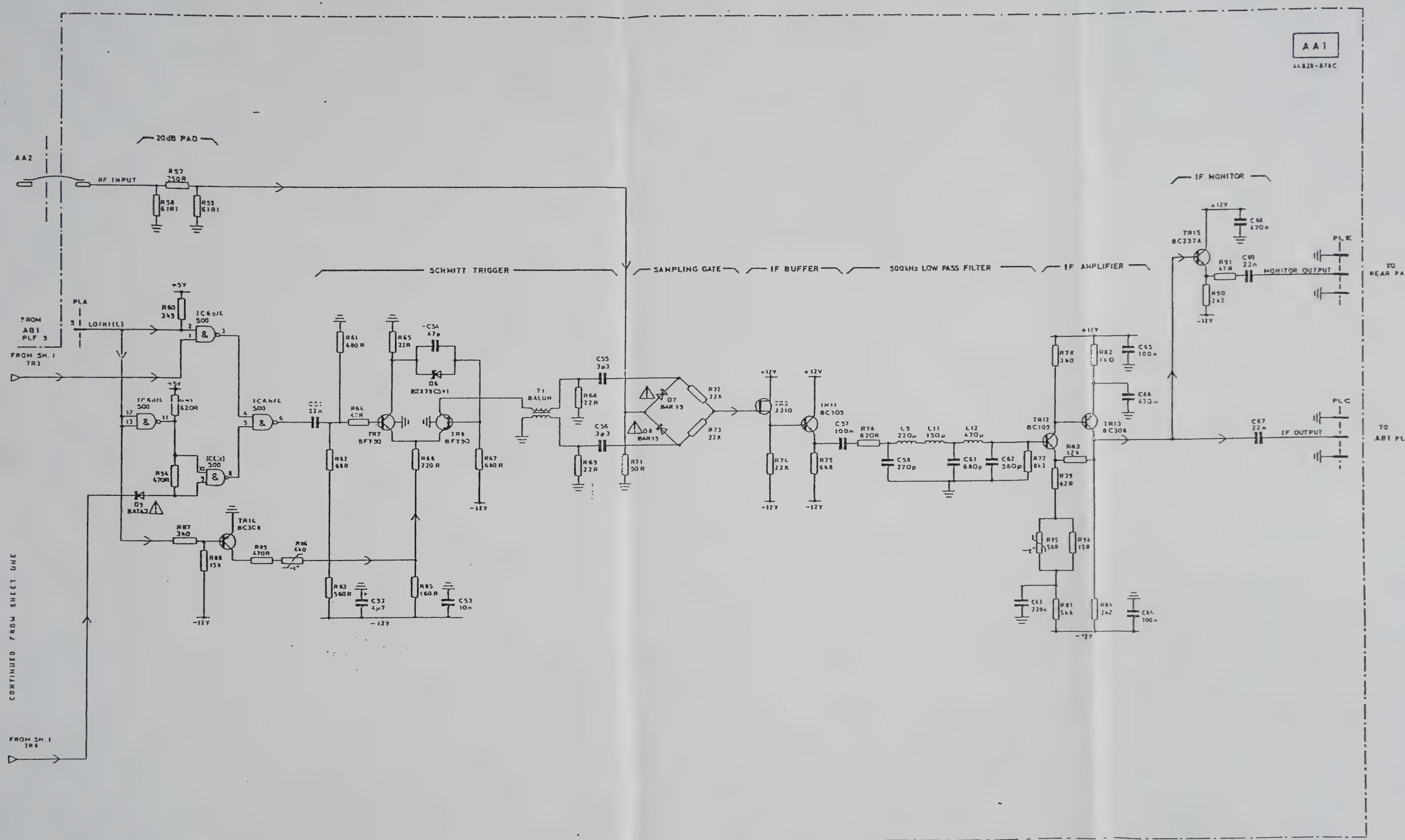
Fig. 7-6 Circuit diagram of RF modulation meter board (Oscillator and PLL)



Drg. No. Z 44828/878 Sheet 2 Issue 8

agram of RF modulation meter board (Mixer)

RF modulation meter board AA



⚠ THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE.

Drg. No. Z 44828/878 Sheet 2 Issue 8

Fig. 7-7 Circuit diagram of RF modulation meter board (Mixer)

AA2

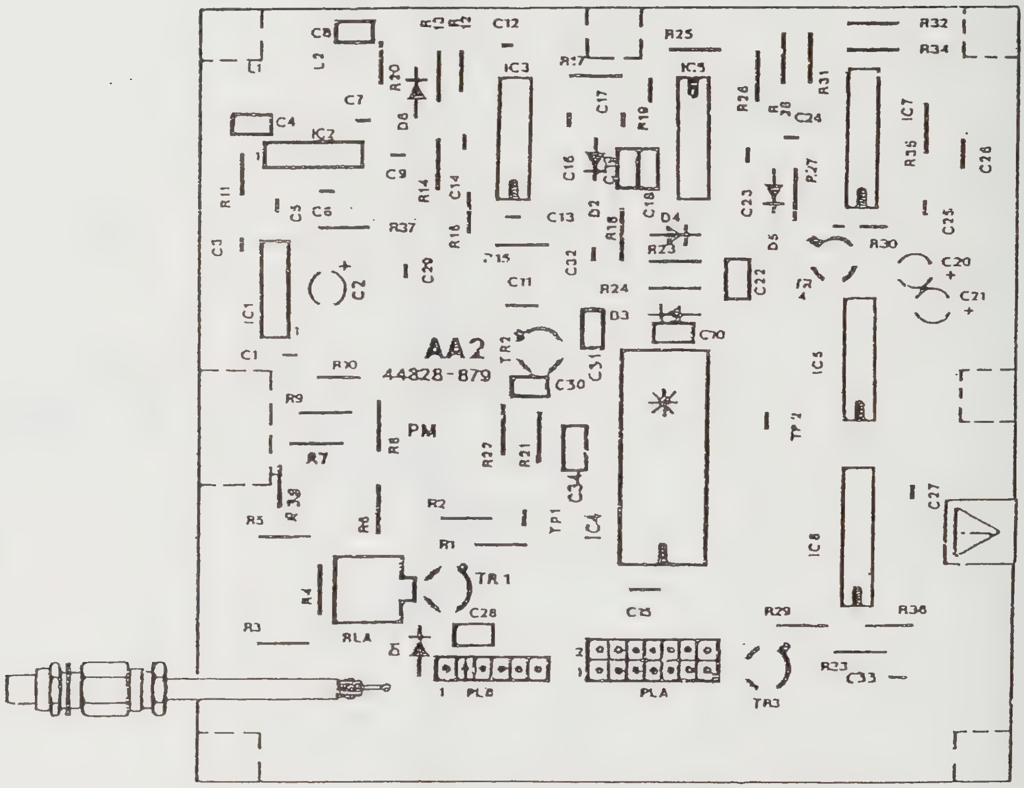
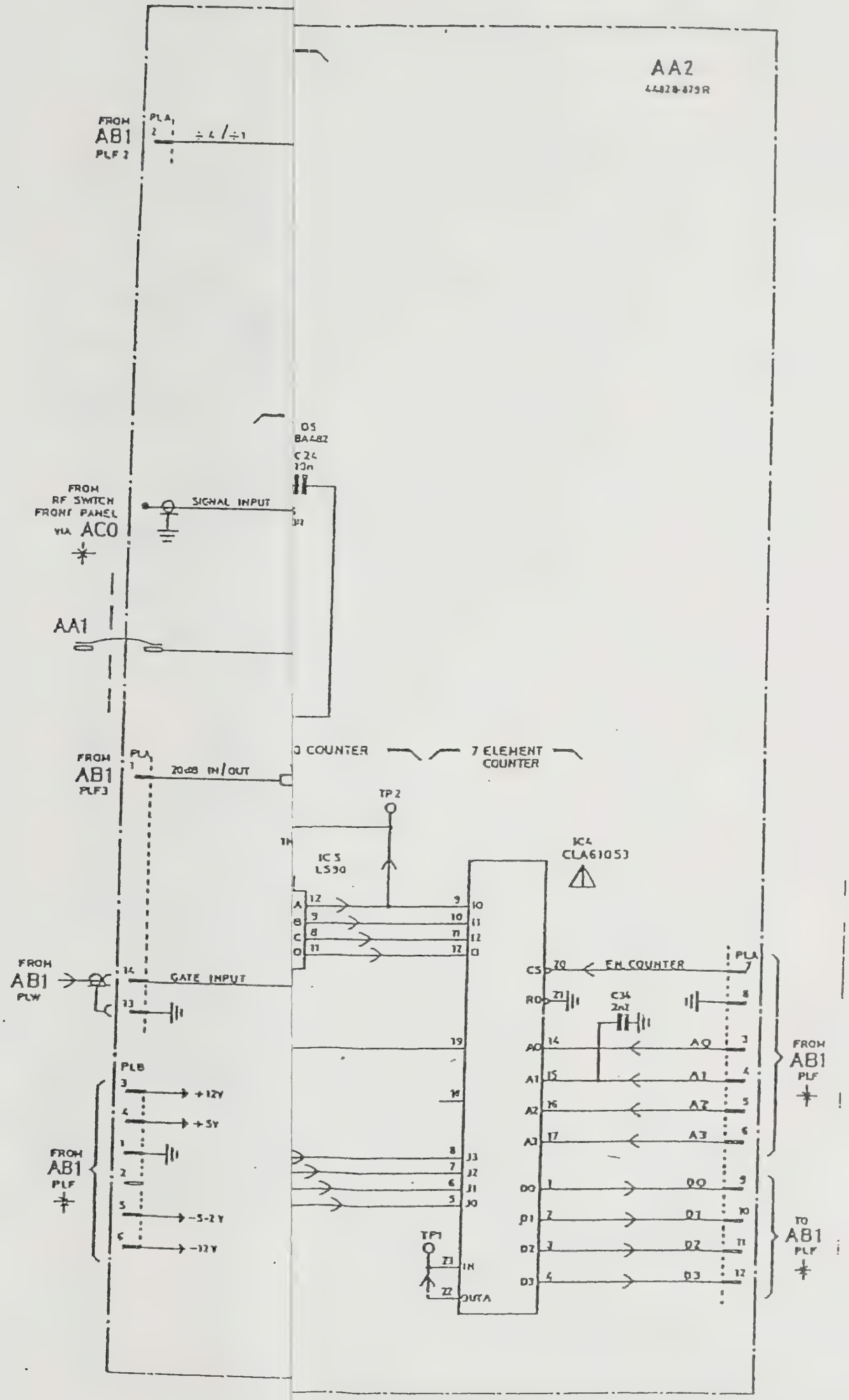


Fig. 7-8 Component layout of RF counter board

Drg. No. 44828/879

AA2



Drg. No. Z 44828/879 Sheet 1 of 1 Issu

Fig. 7-9 Circuit diagram of RF counter board

RF modulation meter board AA1

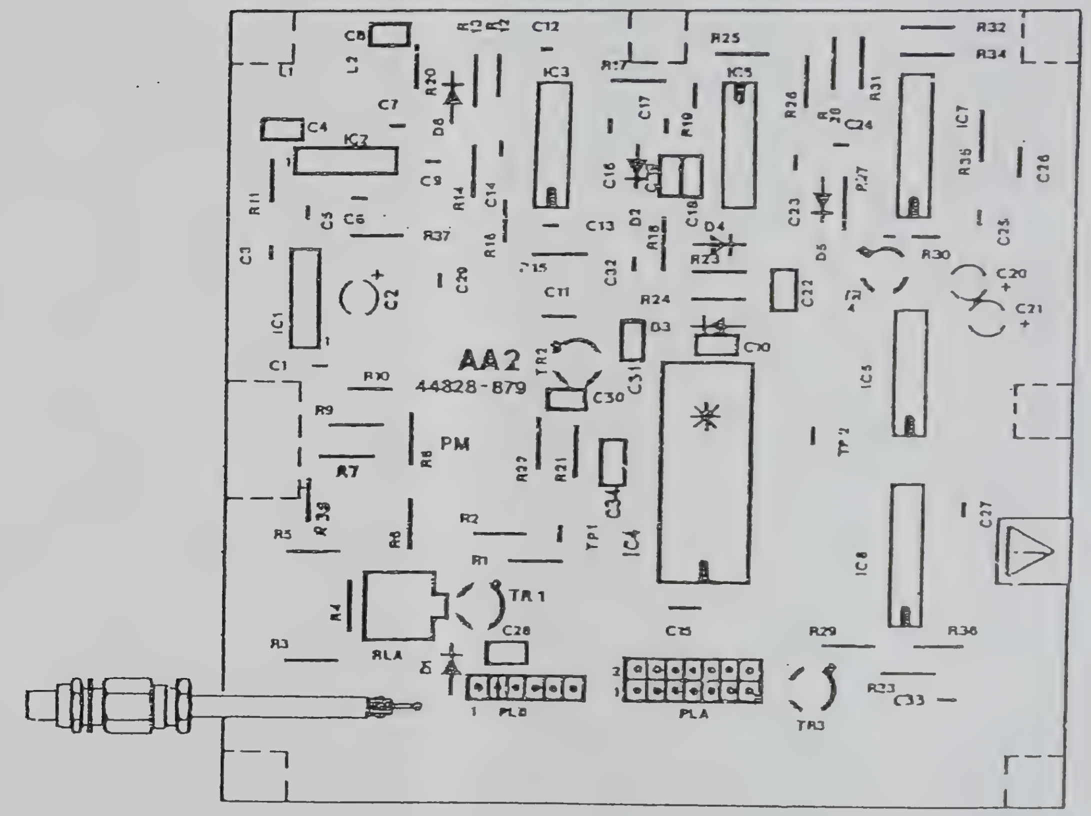
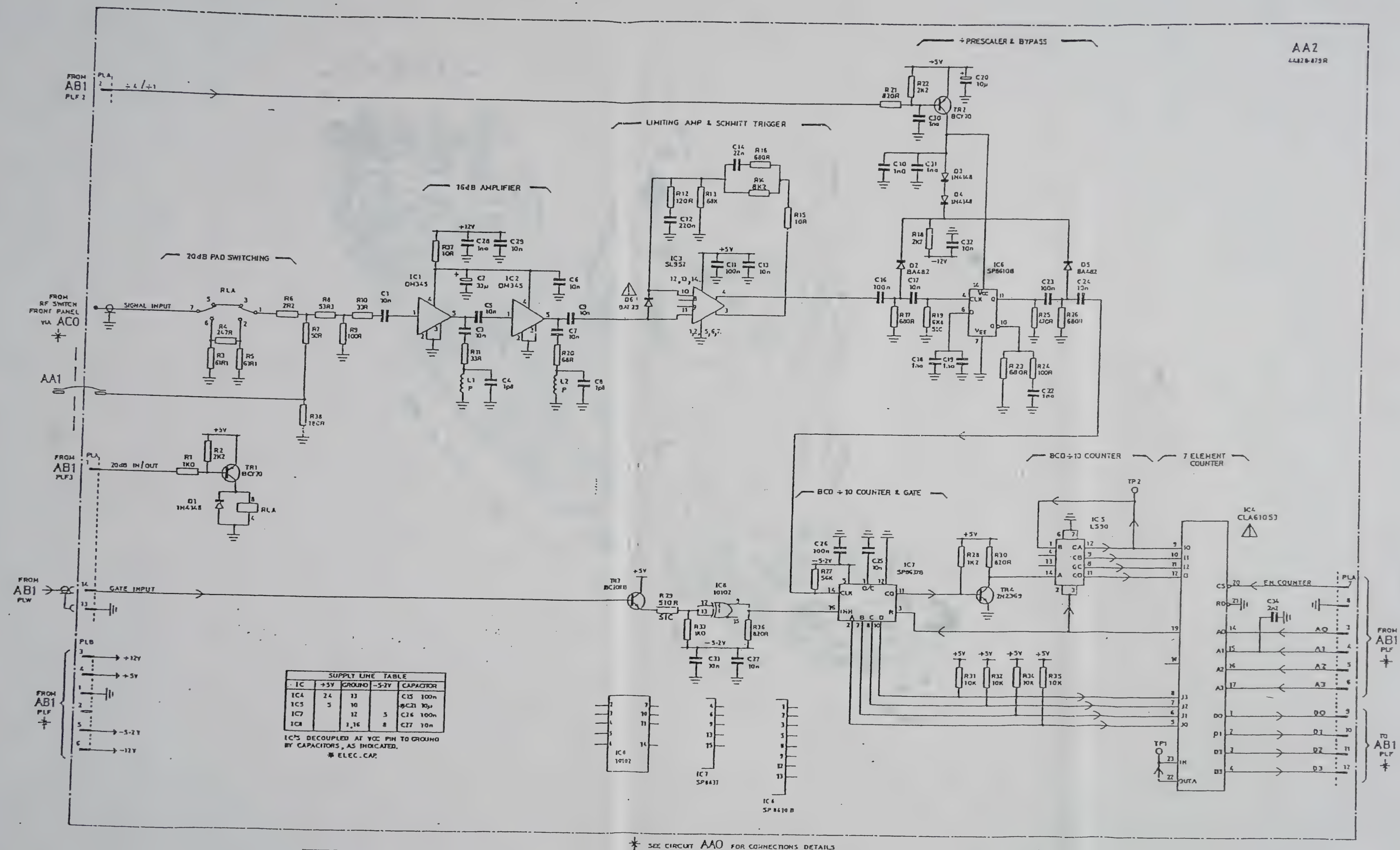


Fig. 7-8 Component layout of RF counter board

Drg. No. 44828/879

AA2



IC	+5V	GROUND	−5·2V	CAPACITOR
IC4	24	13		C15 100n
IC5	5	10		*C21 10µ
IC7		12	5	C26 100n
IC8		1,16	8	C27 10n

⚠ THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE.

Drg. No. Z 44828/879 Sheet 1 of 1 Issue 13

Fig. 7-9 Circuit diagram of RF counter board

AA3

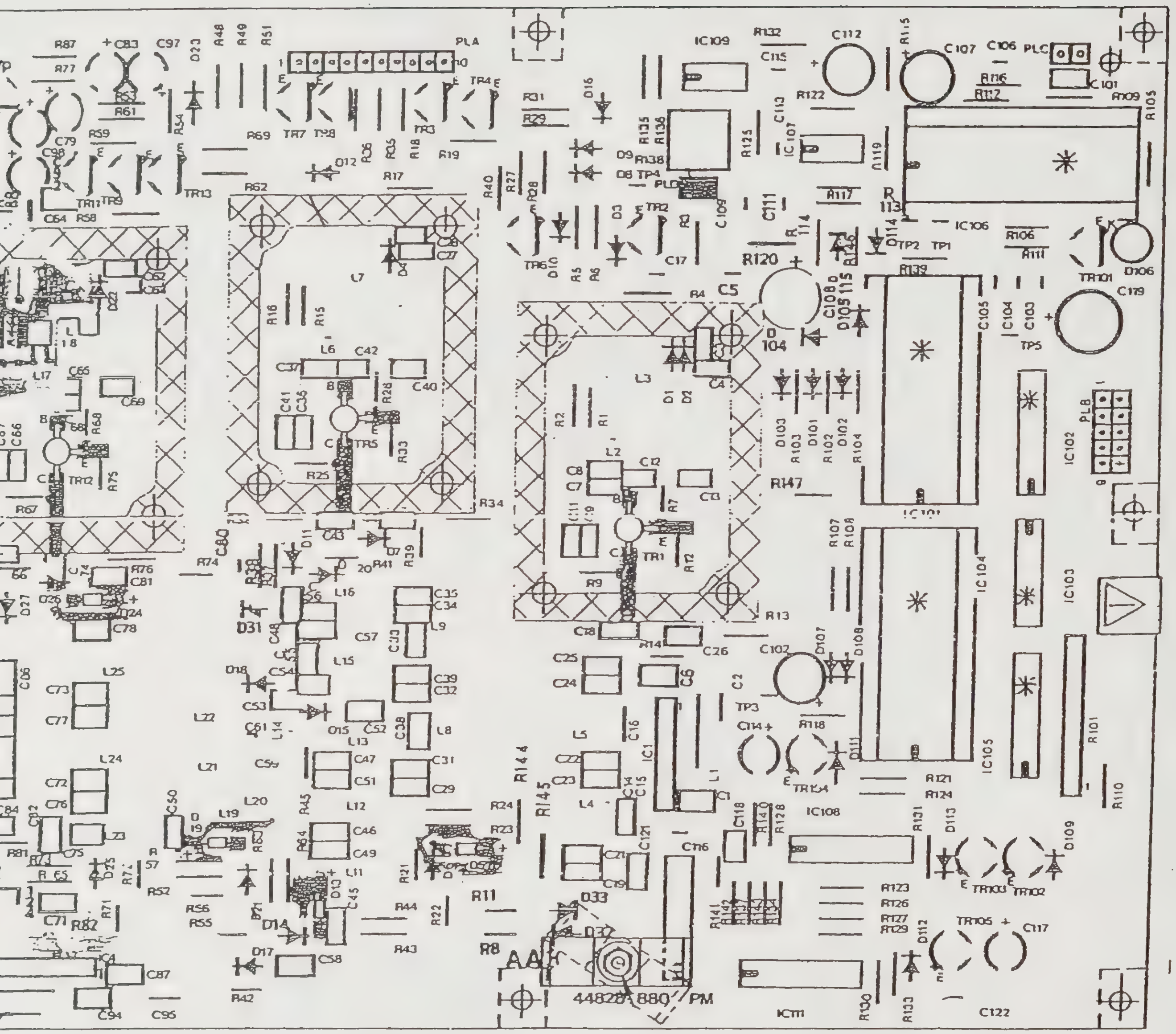
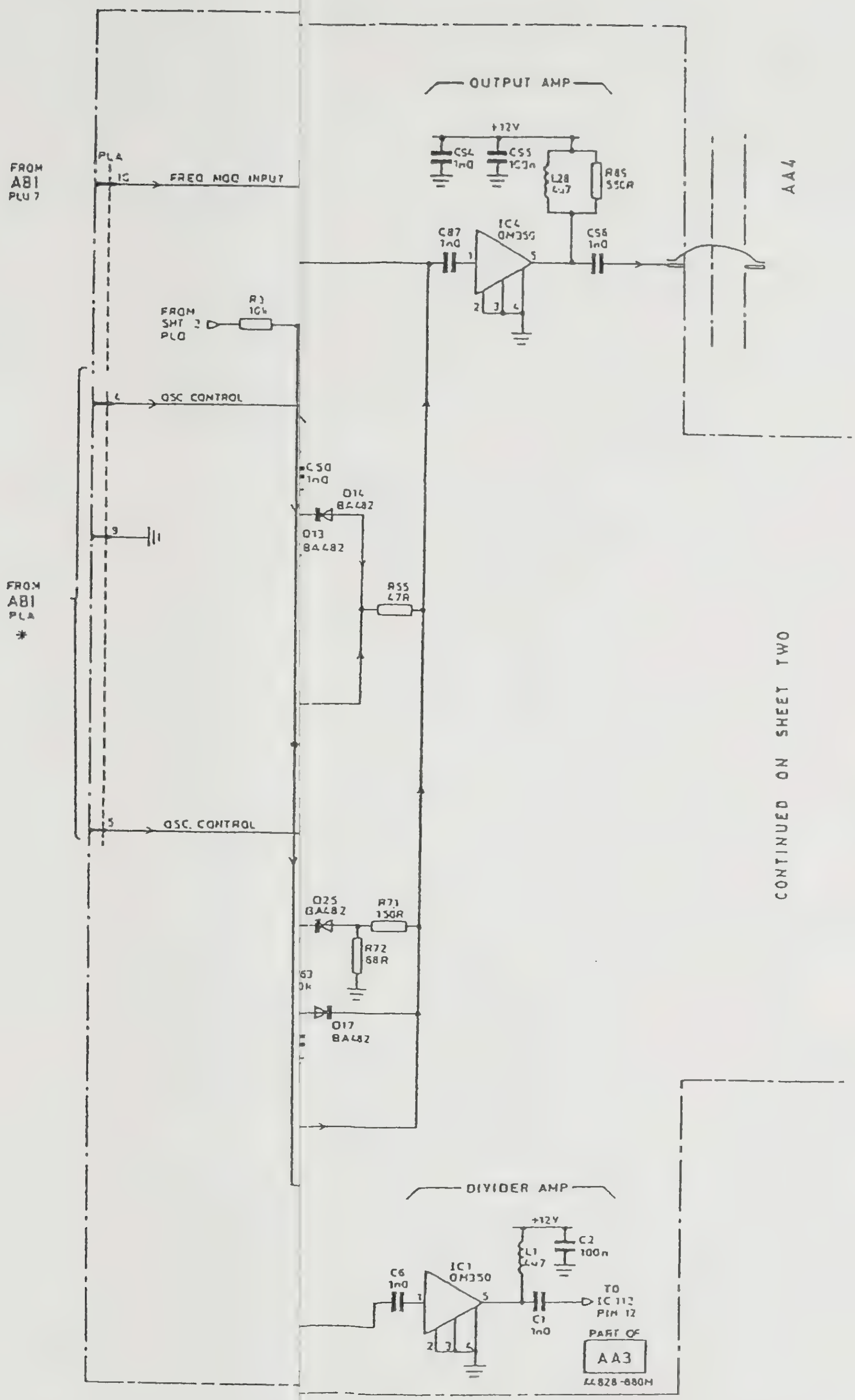


Fig. 7-10 Component layout of RF synthesizer and oscillator board

Drg. No. 44828/880

AA3



Drg. No. Z 44828/880 Sheet 1 Issue 2

r and oscillator board (Oscillator and filters)

AA3

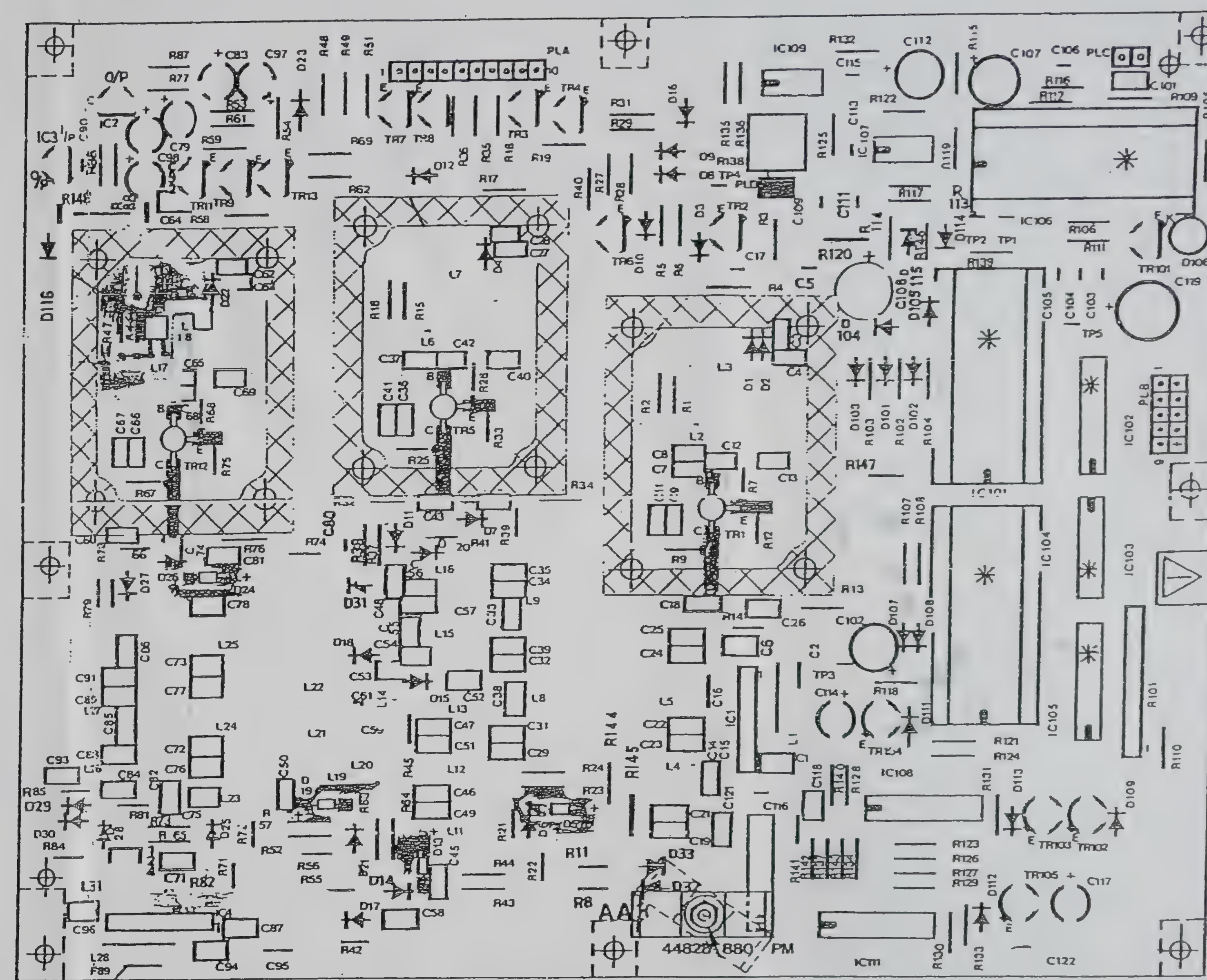
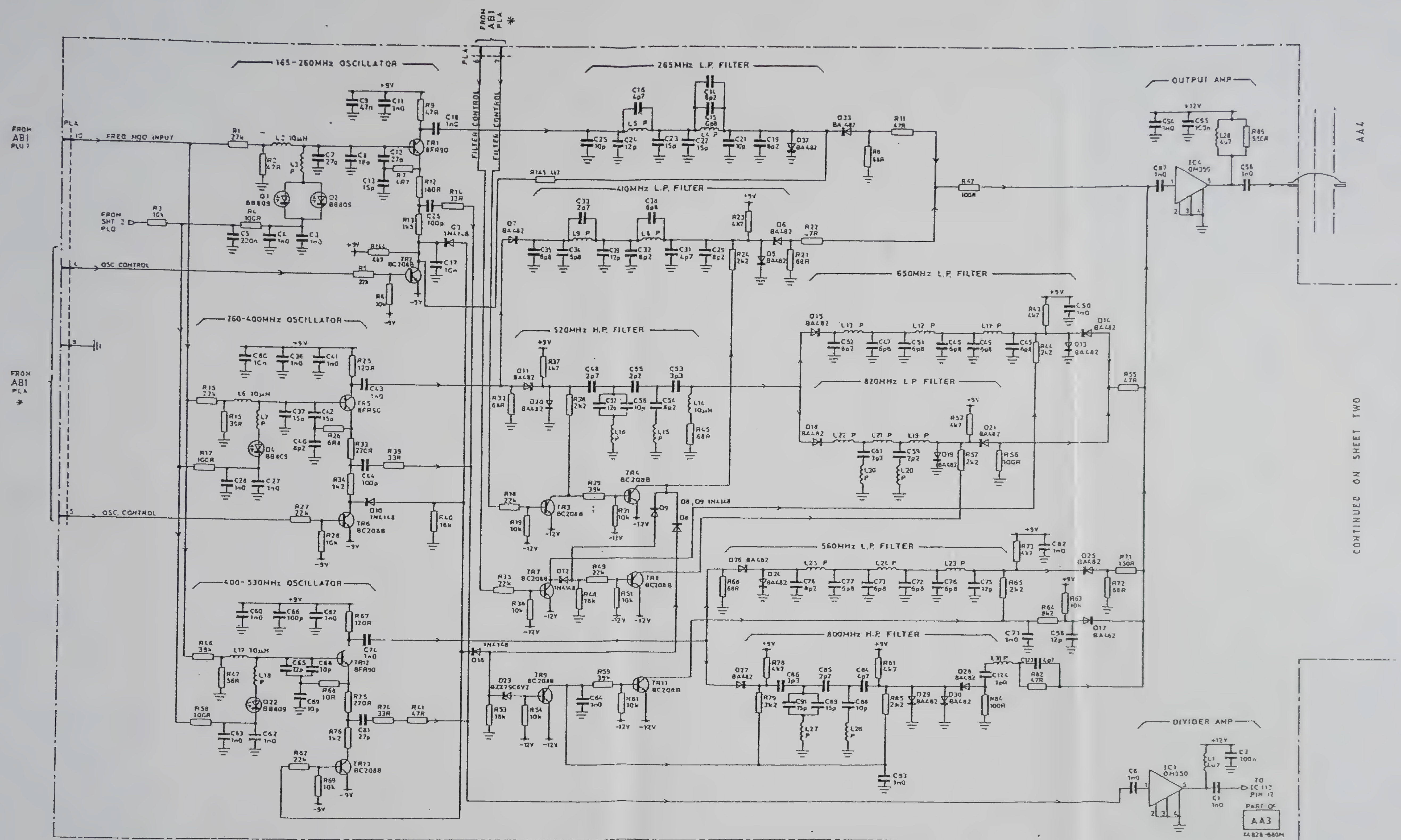


Fig. 7-10 Component layout of RF synthesizer and oscillator board Drg. No. 44828/880

RF counter board AA2

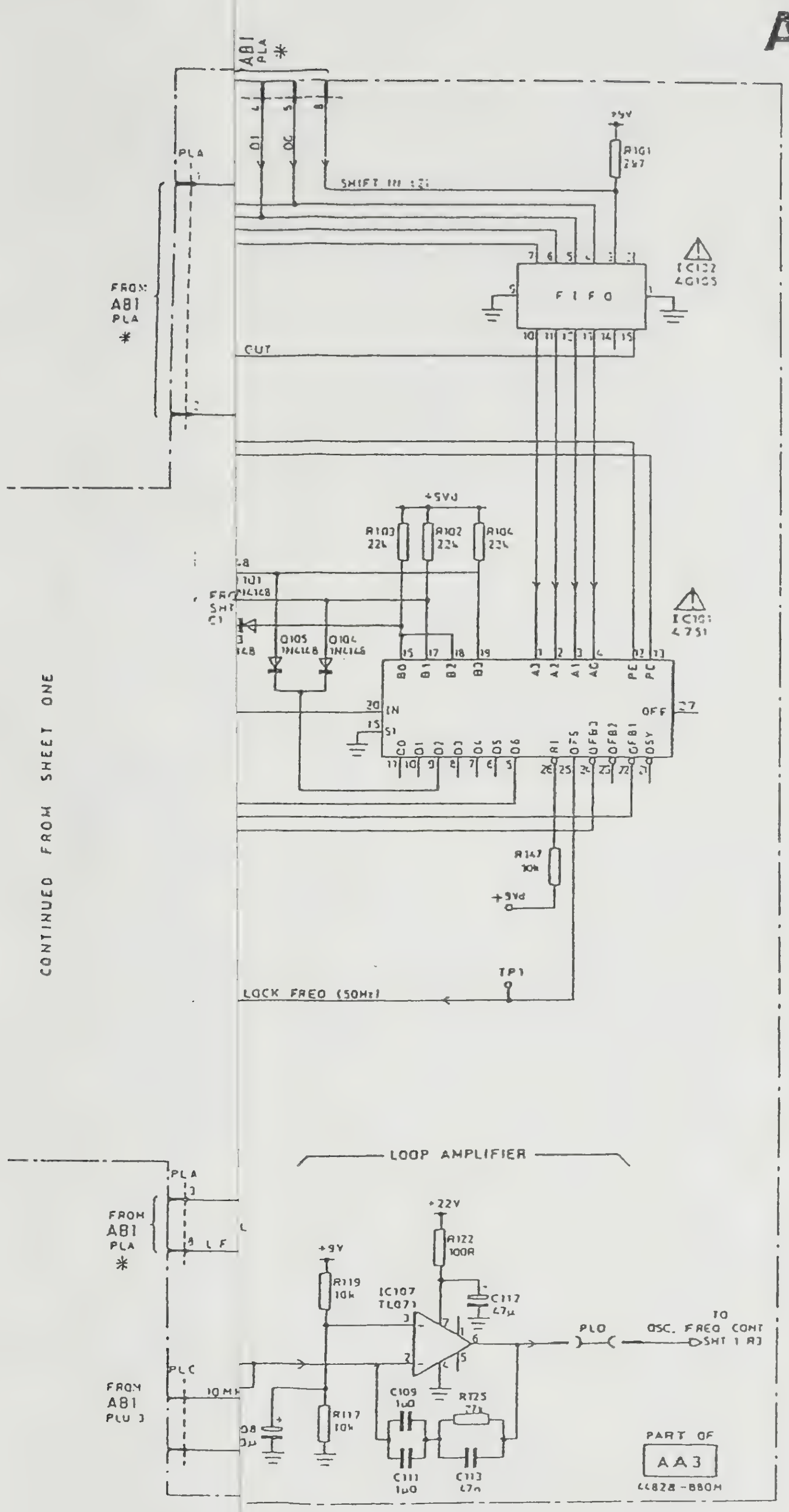


✳ SEE CIRCUIT AA0 FOR CONNECTIONS DETAILS

Drg. No. Z 44828/880 Sheet 1 Issue 2

Fig. 7-11 Circuit diagram of RF synthesizer and oscillator board (Oscillator and filters)

46882-114B
Dec. 91

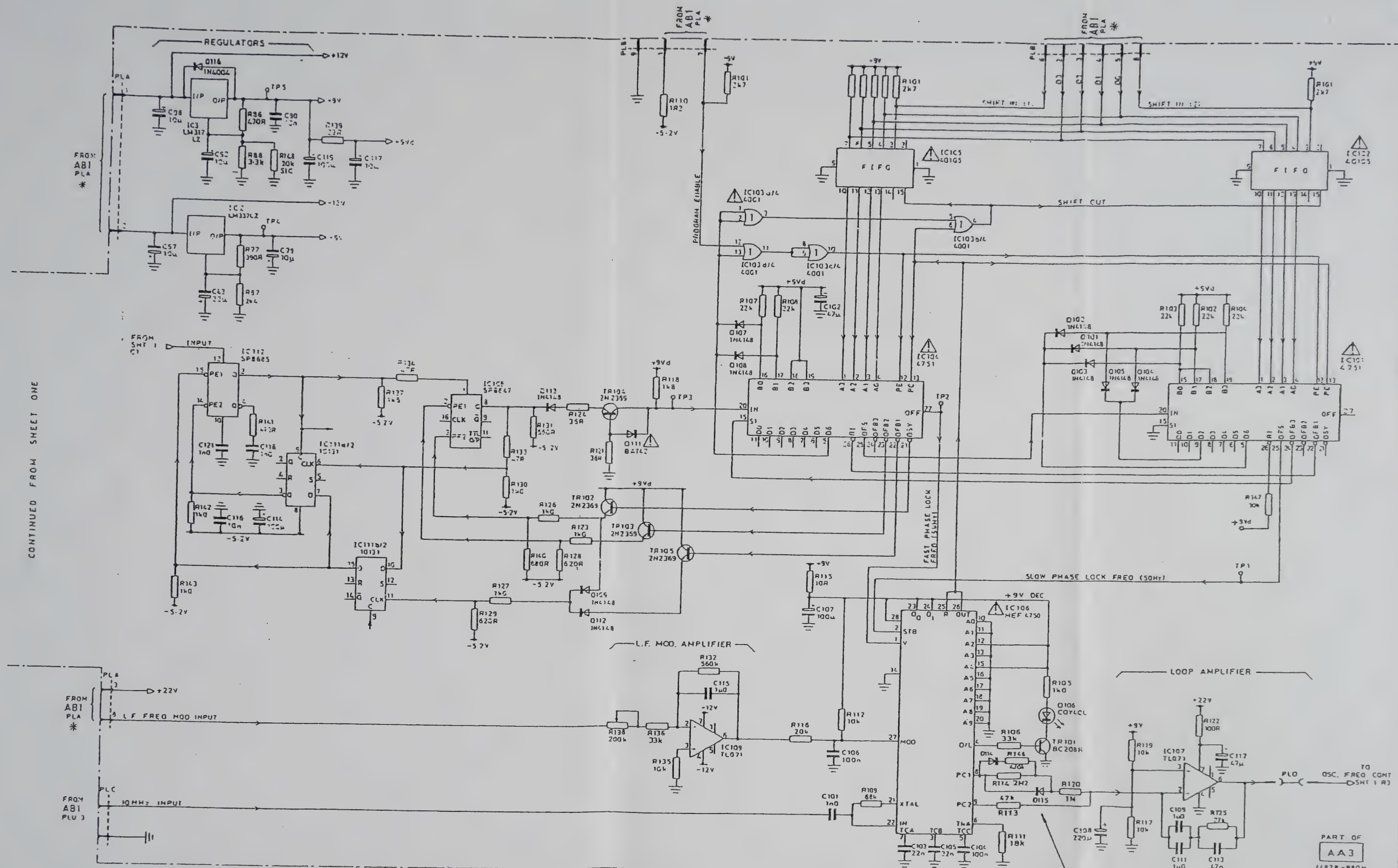


NOTE: D114, D115 ARE TYPE 1N4148.

* SEE CIRCUIT AA0 FOR CONNECTION DETAILS

Org. No. Z 44828/880 Sheet 2 Iss *of RF synthesizer and oscillator board (Dividers)*

RF synthesizer and oscillator board AA3



NOTE: D114, D115 ARE TYPE 1N4148.

SUPPLY LINE TABLE					
IC	+9V	+9Vd	GND	-5·2V	DEC CAP
IC101		28	14		
IC102	16		8		
IC103	14		7		
IC104		28	14		
IC105	16		8		
IC108			5	12	
IC111			1,16	8	
IC112			16	8	C122, 10n

⚠ THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE.

* SEE CIRCUIT AA0 FOR CONNECTION DETAILS

Drg. No. Z 44828/880 Sheet 2 Issue 12

Fig. 7-12 Circuit diagram of RF synthesizer and oscillator board (Dividers)

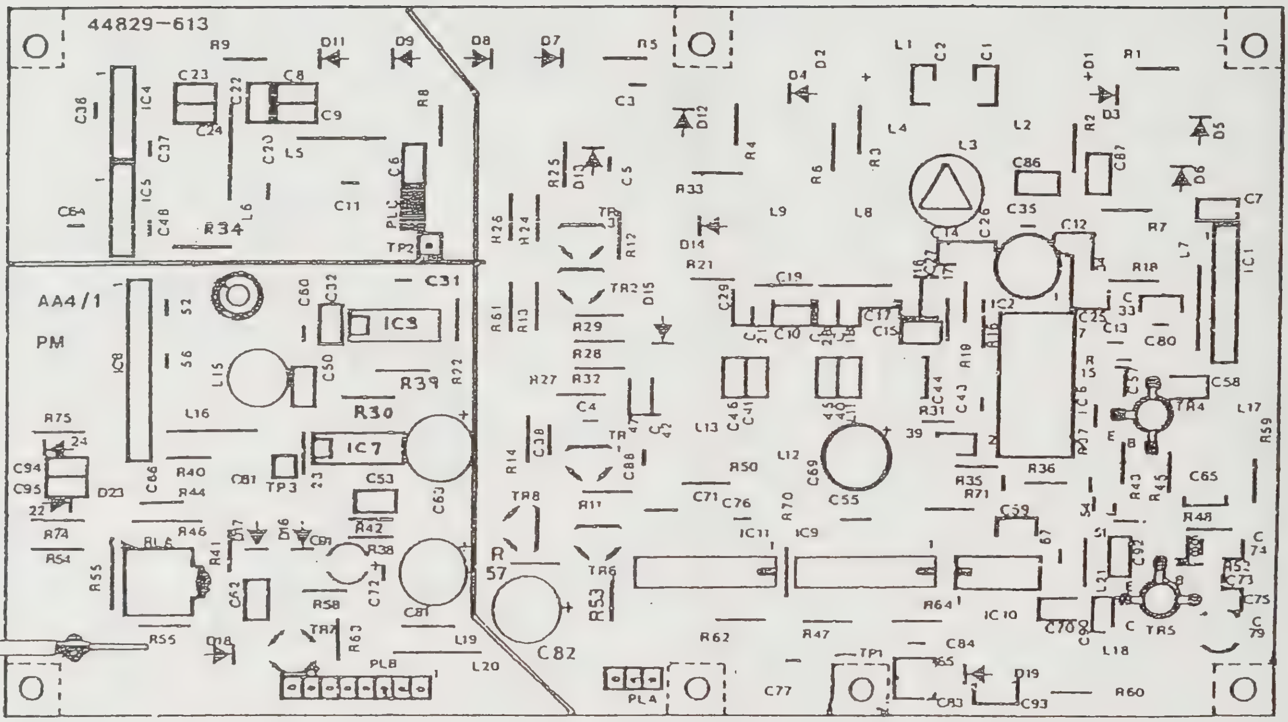
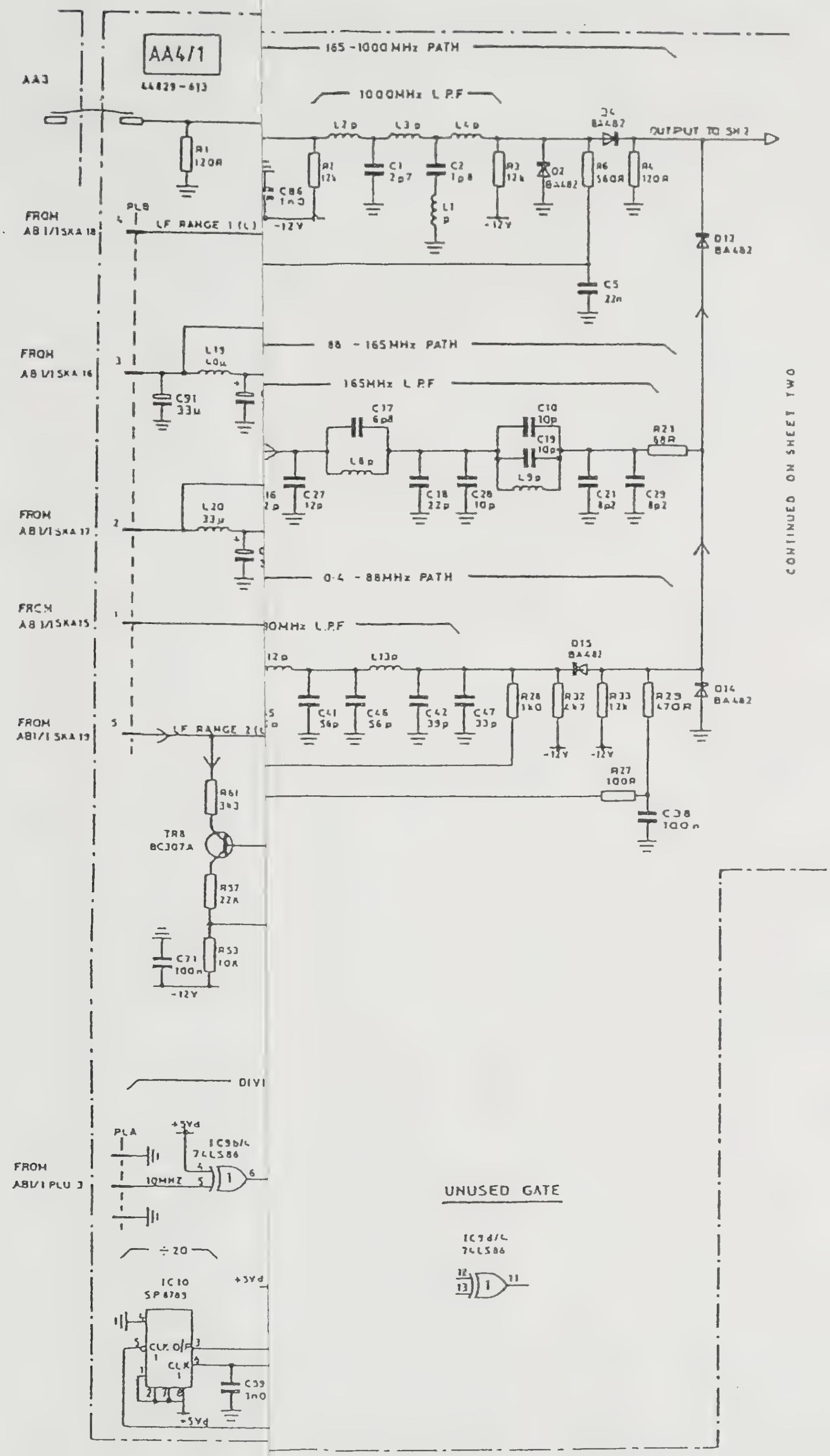


Fig. 7-13 Component layout of LF synthesizer and output amplifier board Drg. No. 44829/613



Org. No. Z 44829/613 Sheet 1 Issu

synthesizer and output amplifier board (Mixer)

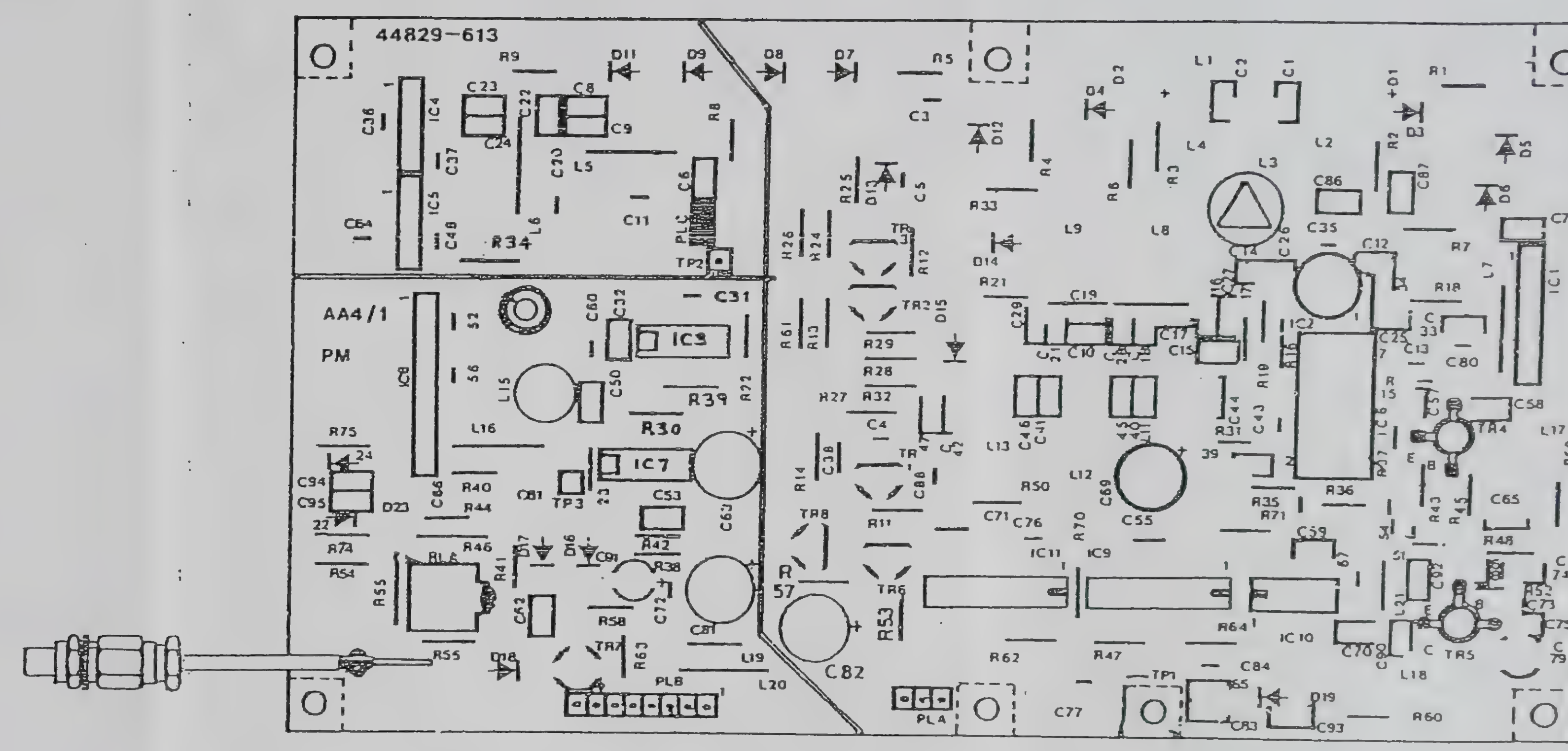
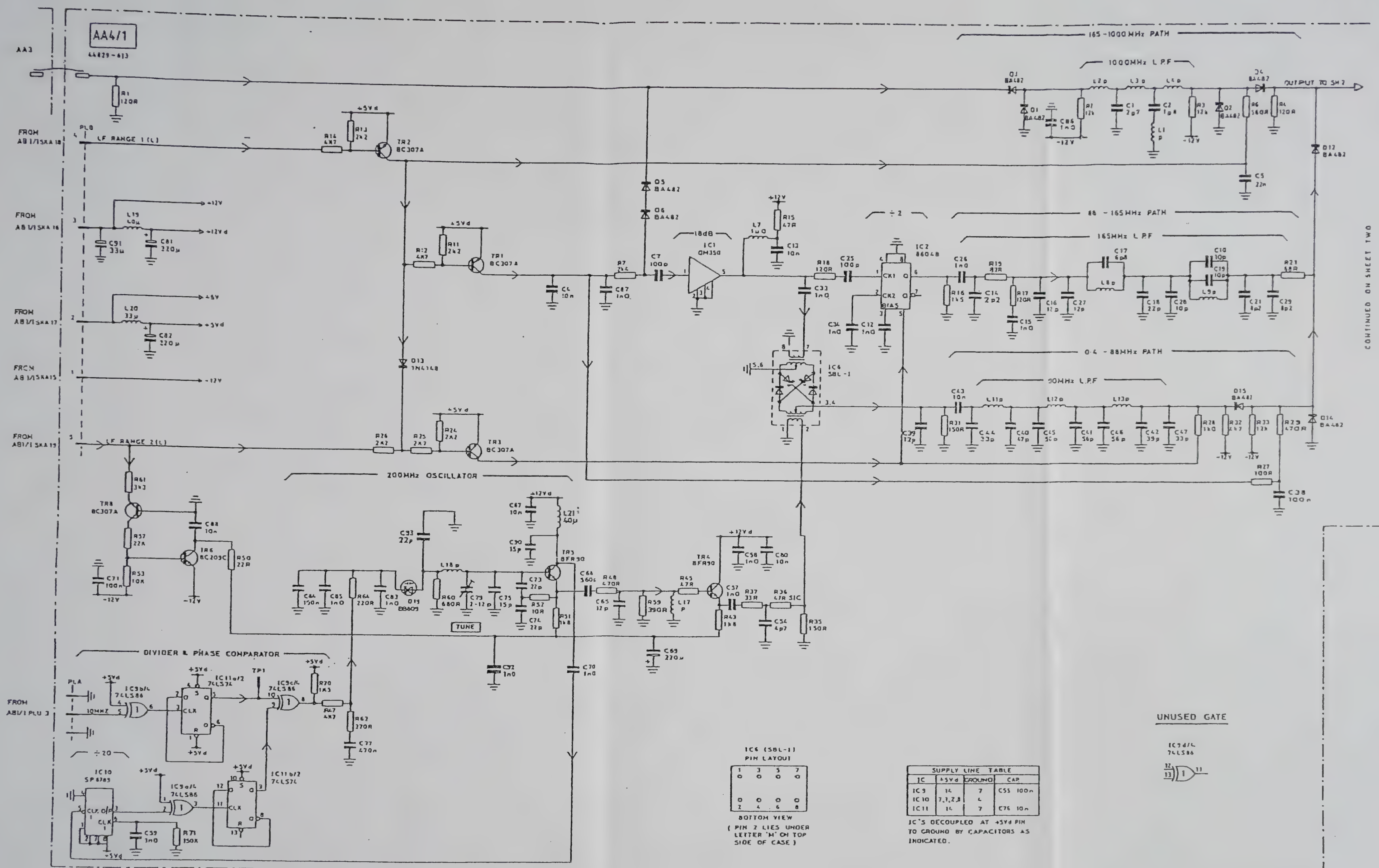


Fig. 7-13 Component layout of LF synthesizer and output amplifier board

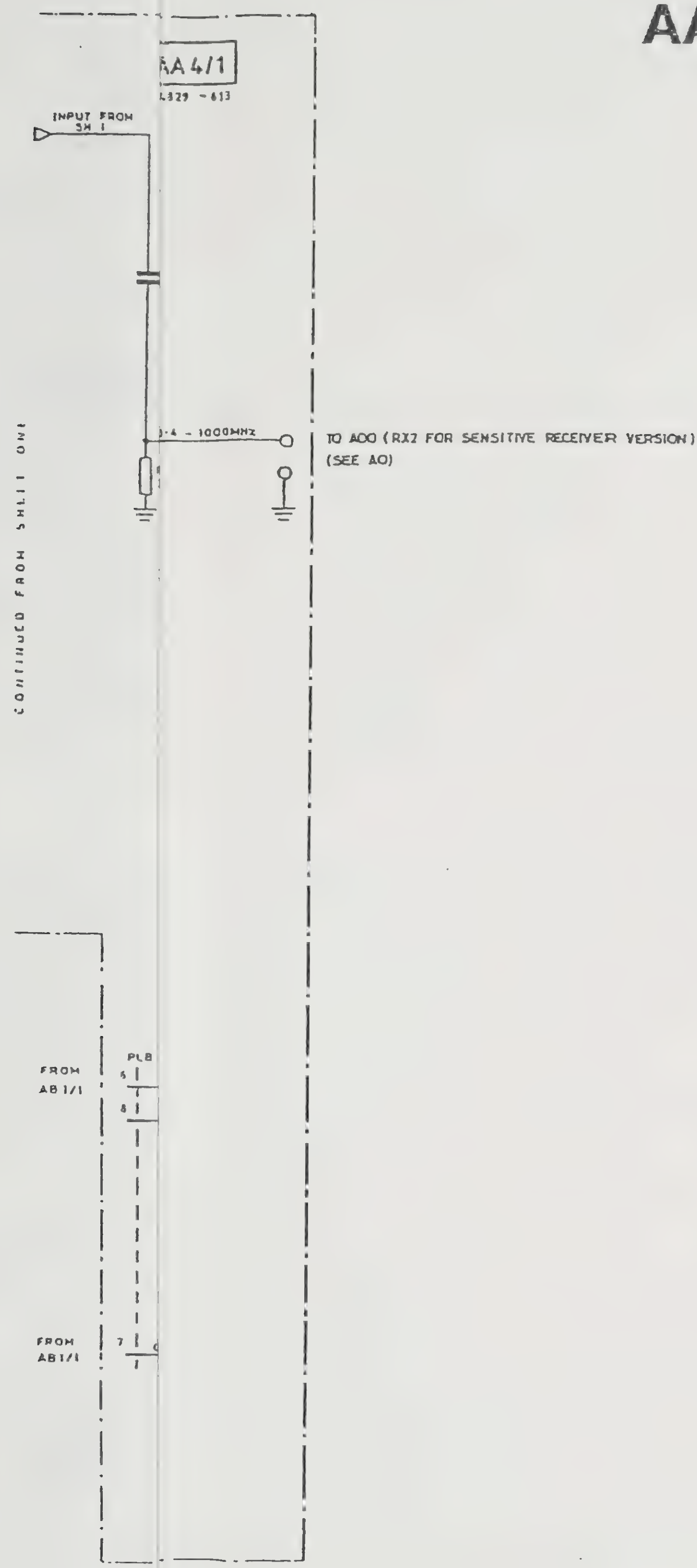
Drg. No. 44829/613

RF synthesizer and oscillator board AA3



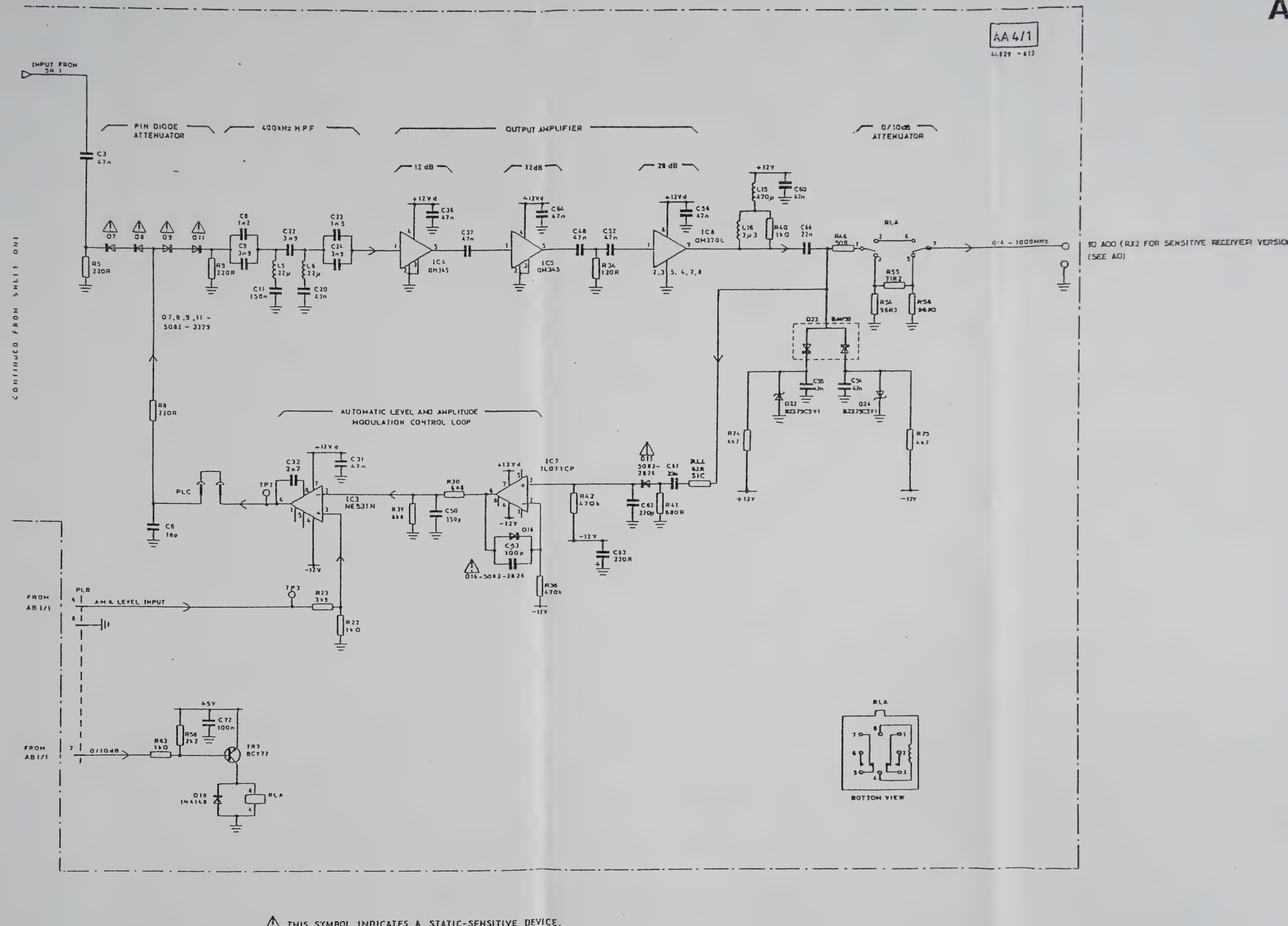
Drg. No. Z 44829/613 Sheet 1 Issue 2

Fig. 7-14 Circuit diagram of LF synthesizer and output amplifier board (Mixer)



Drg. No. Z 44829/613 Sheet 2 1st *synthesizer and output amplifier board (Output)*

LF synthesizer and output amplifier board AA4/1



Drg. No. Z 44829/613 Sheet 2 Issue 3

Fig. 7-15 Circuit diagram of LF synthesizer and output amplifier board (Output)

AB1/1

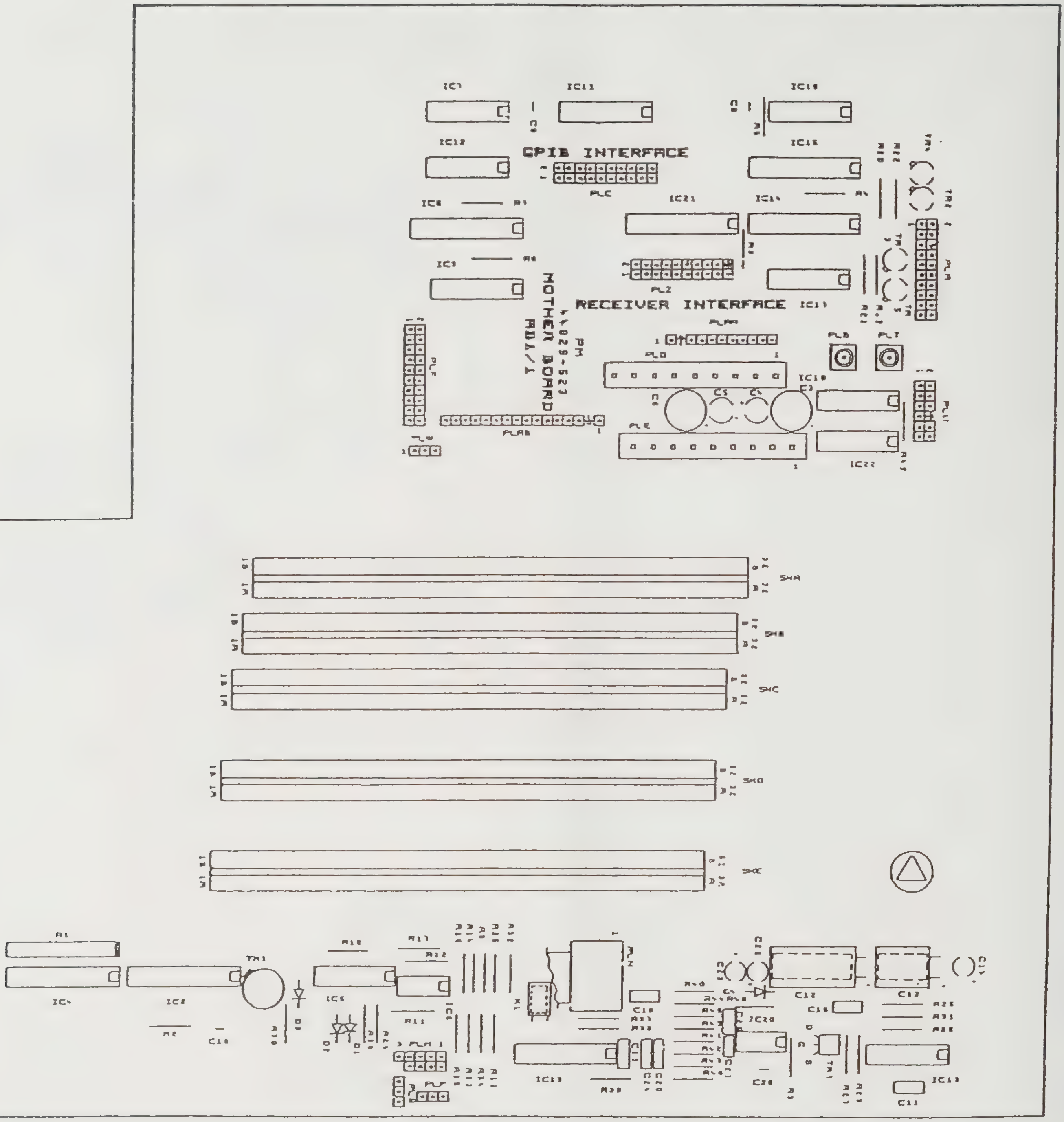
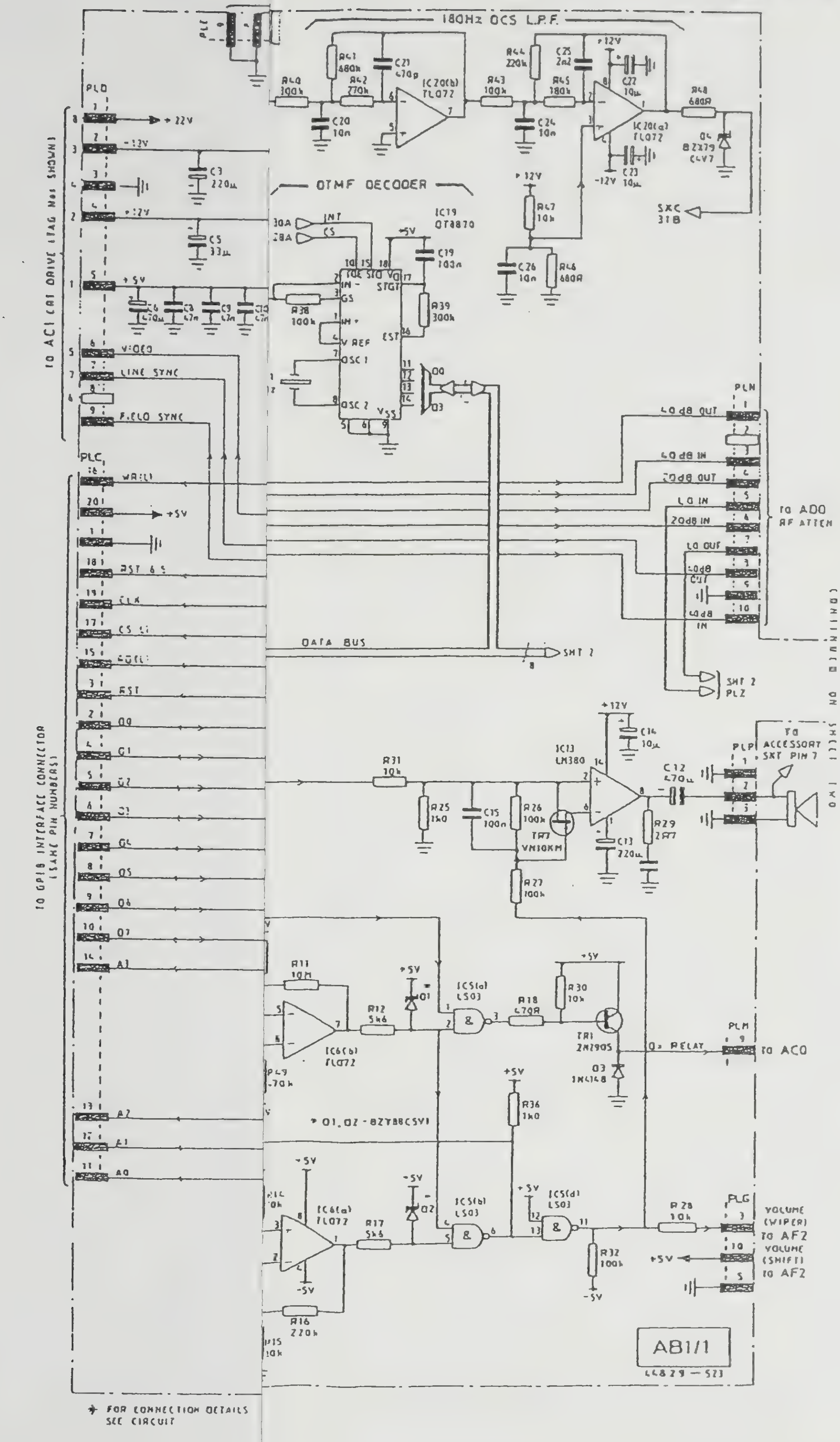


Fig. 7-16 Component layout of Motherboard

Drg. No. 44829/523



Drg. No. Z 44829/523 Sheet 1 [...]n of Motherboard (Audio amplifier and protection)

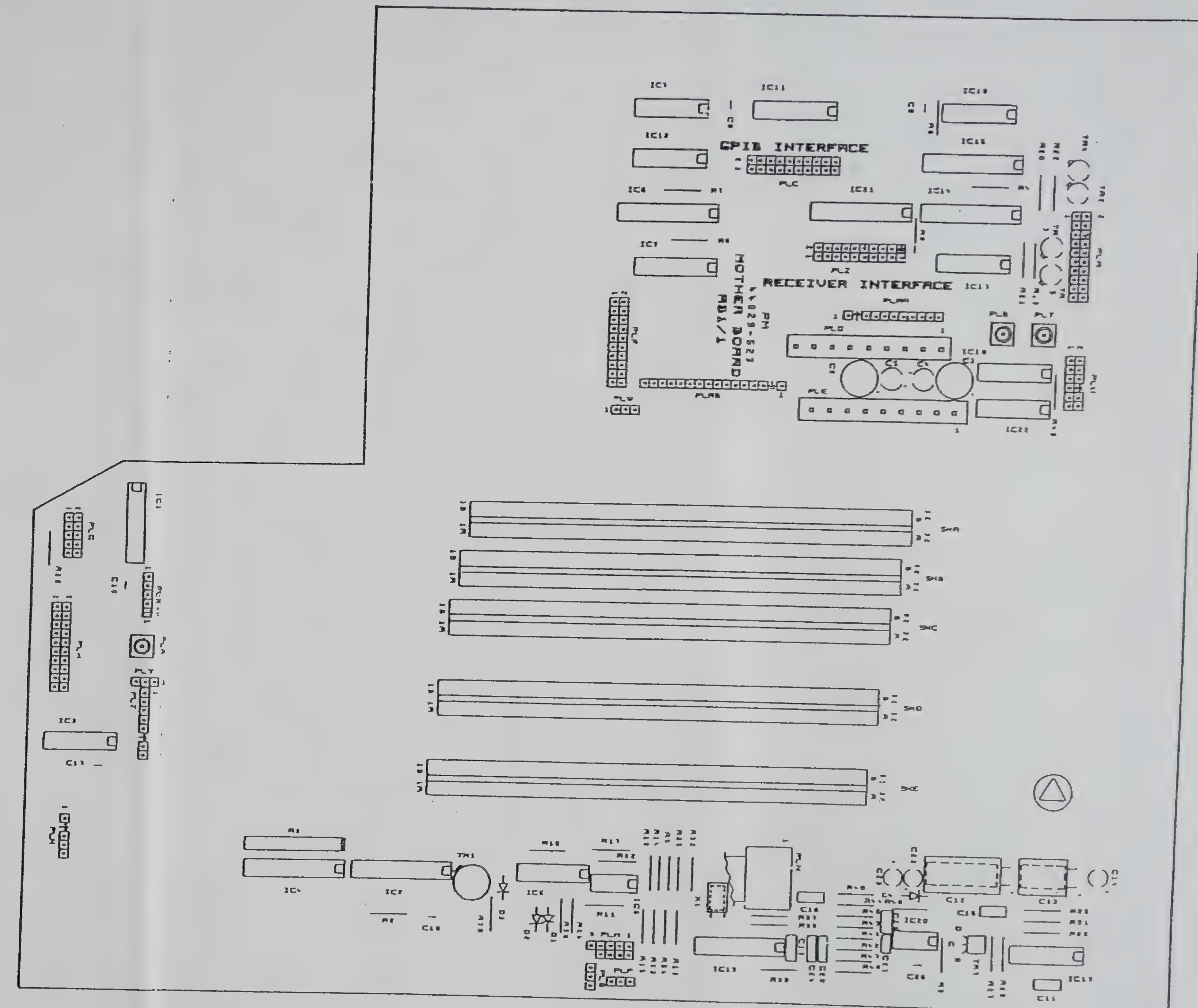
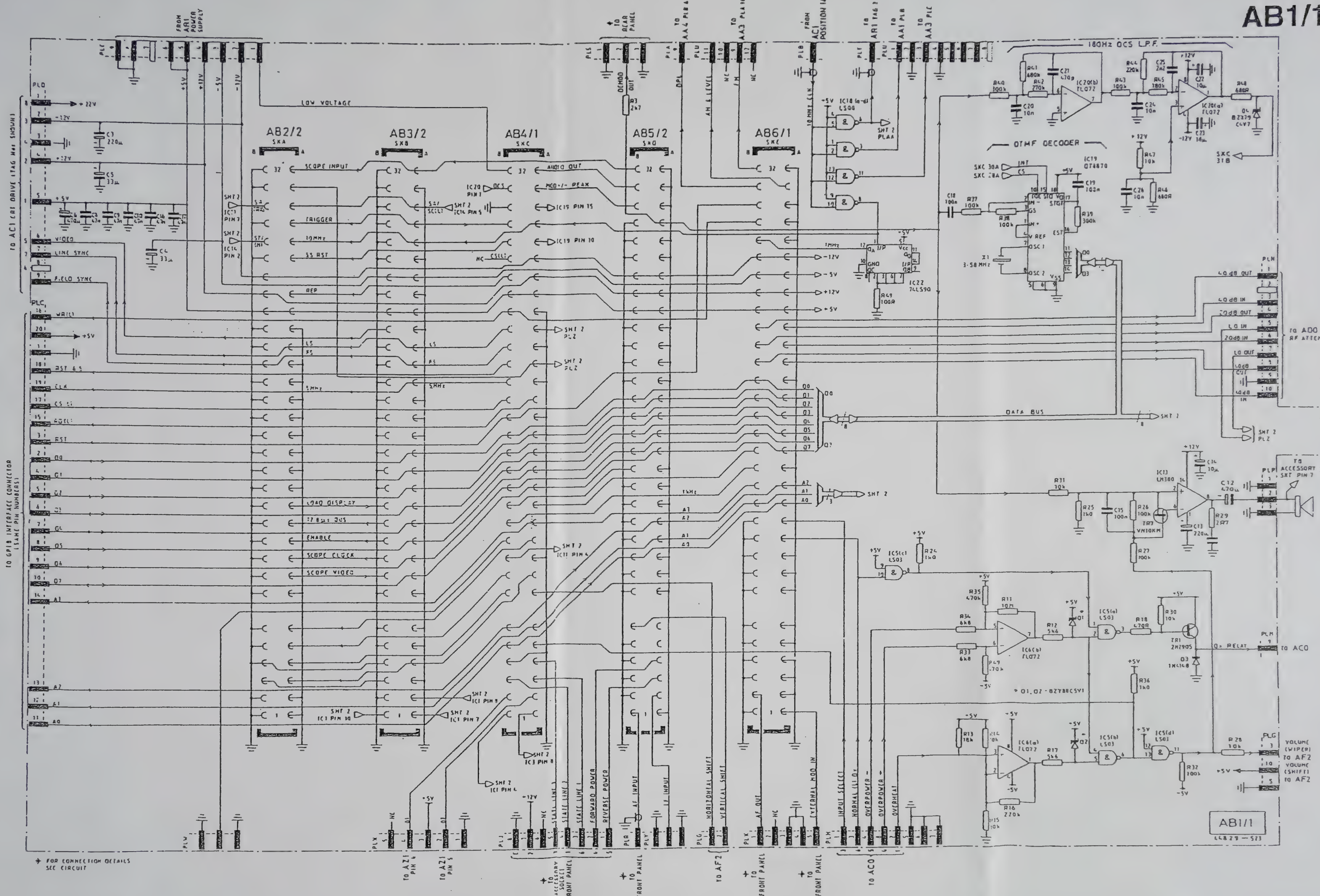


Fig. 7-16 Component layout of Motherboard

Drg. No. 44829/523

LF synthesizer and output amplifier board AA4/1



Drg. No. Z 44829/523 Sheet 1 Issue 6

Fig. 7-17 Circuit diagram of Motherboard (Audio amplifier and protection)

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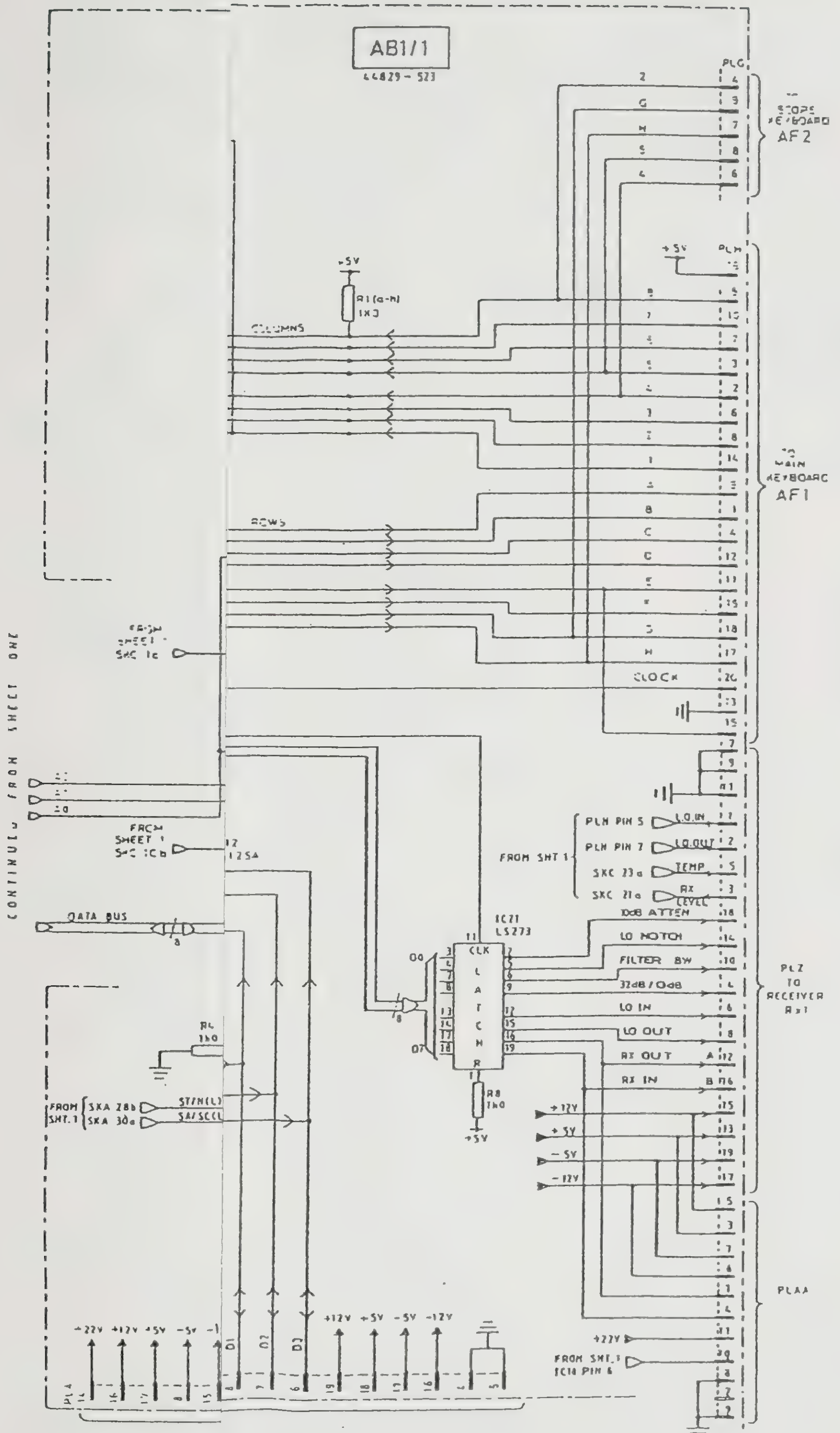
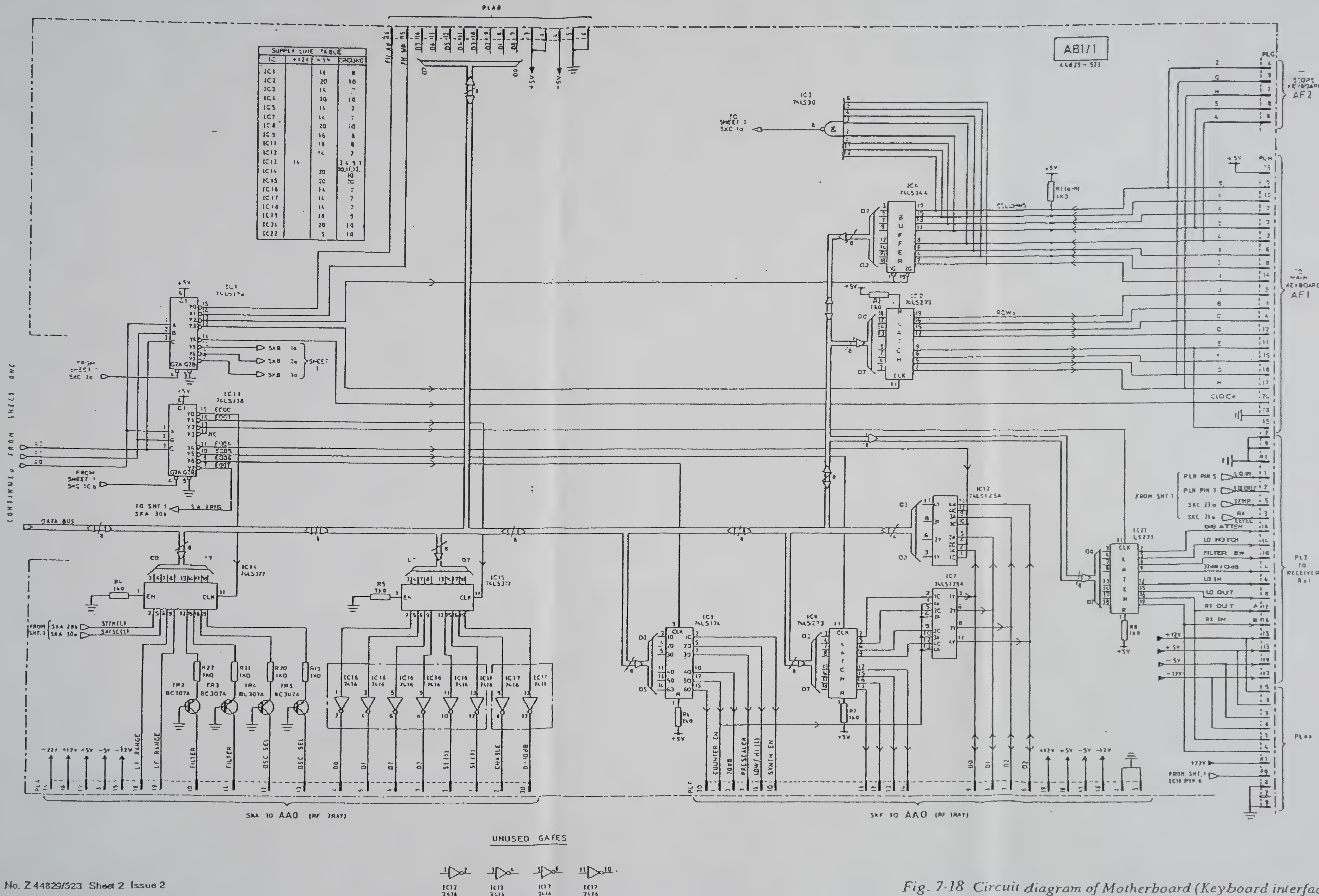
Dec. 91



Drg. No. Z 44829/523 Sheet 2 Circuit diagram of Motherboard (Keyboard interface)

Motherboard AB1/1



SUPPLY LINE TABLE			
IC	+12V	+5V	GROUND
IC1		16	8
IC2		20	10
IC3		14	7
IC4		20	10
IC5		14	7
IC7		14	7
IC8		20	10
IC9		16	8
IC11		16	8
IC12		14	7
IC13	14		3 4 5 7 10,11,12,
IC14		20	10
IC15		20	10
IC16		14	7
IC17		14	7
IC18		14	7
IC19		18	9
IC21		20	10
IC22		5	10

Drg. No. Z 44829/523 Sheet 2 Issue 2

Fig. 7-18 Circuit diagram of Motherboard (Keyboard interface)

AB2/2

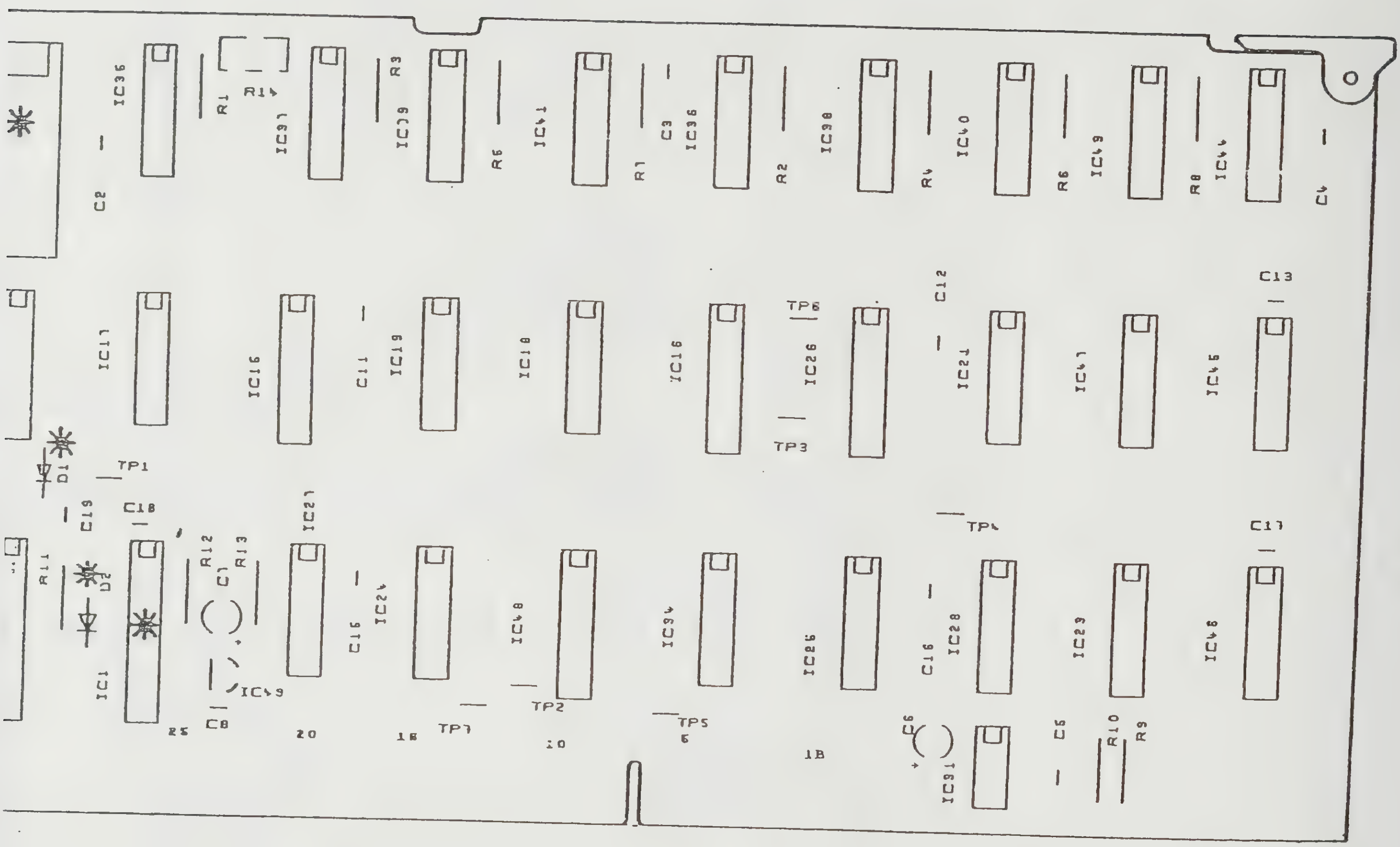
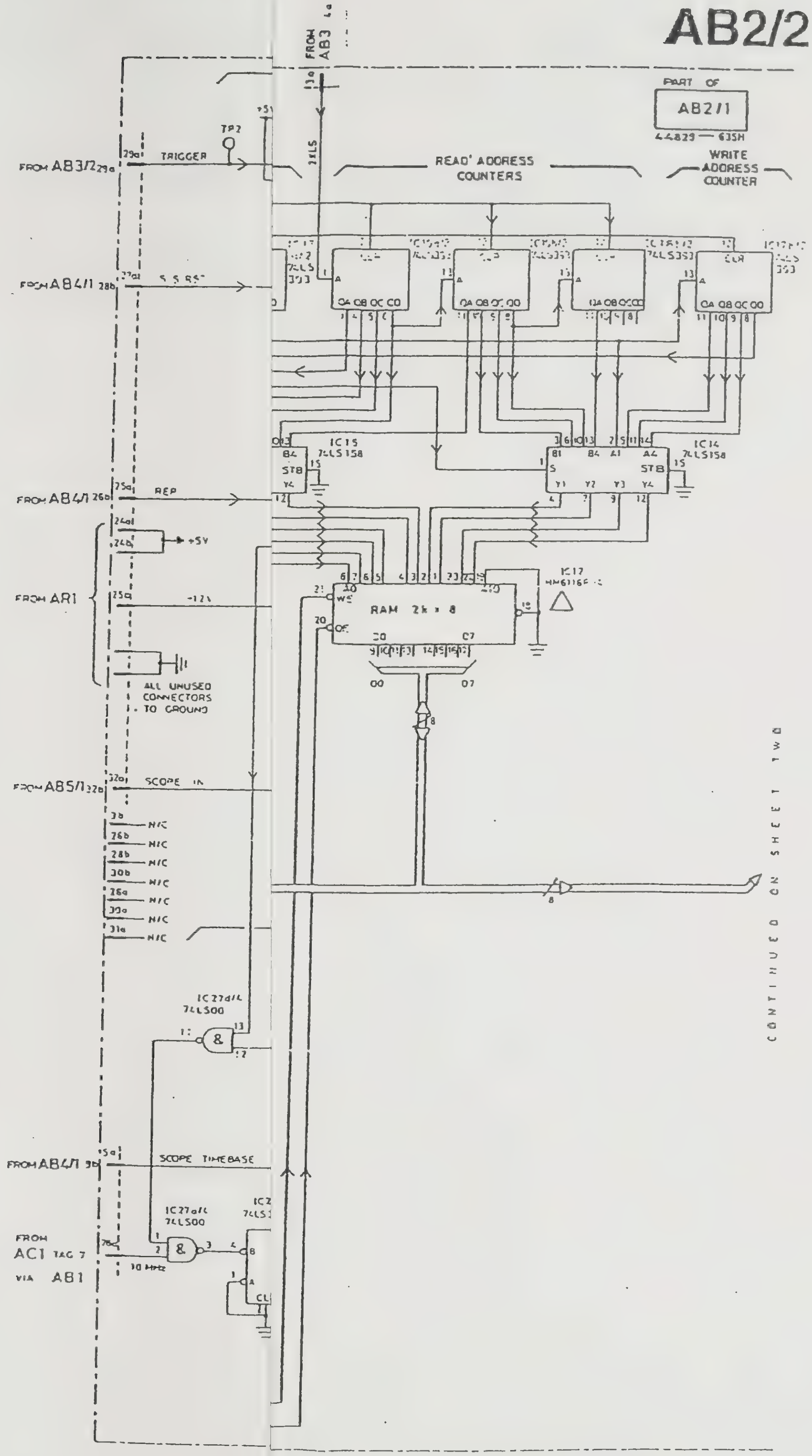


Fig. 7-19 Component layout of Digital scope board

Drg. No. 44829/635



Drg. No. Z 44829/635 Sheet 1 Issu...ram of Digital scope board (ADC and timing)

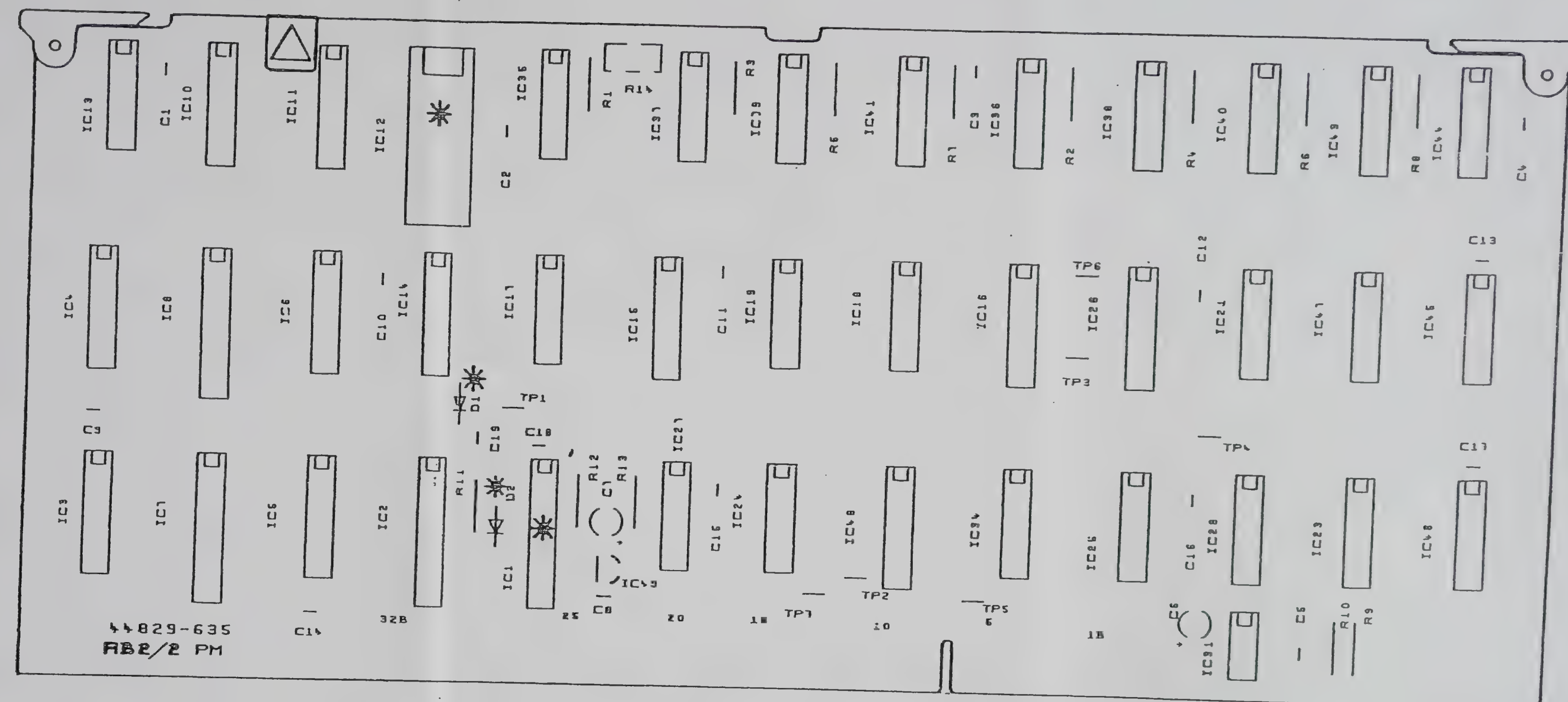
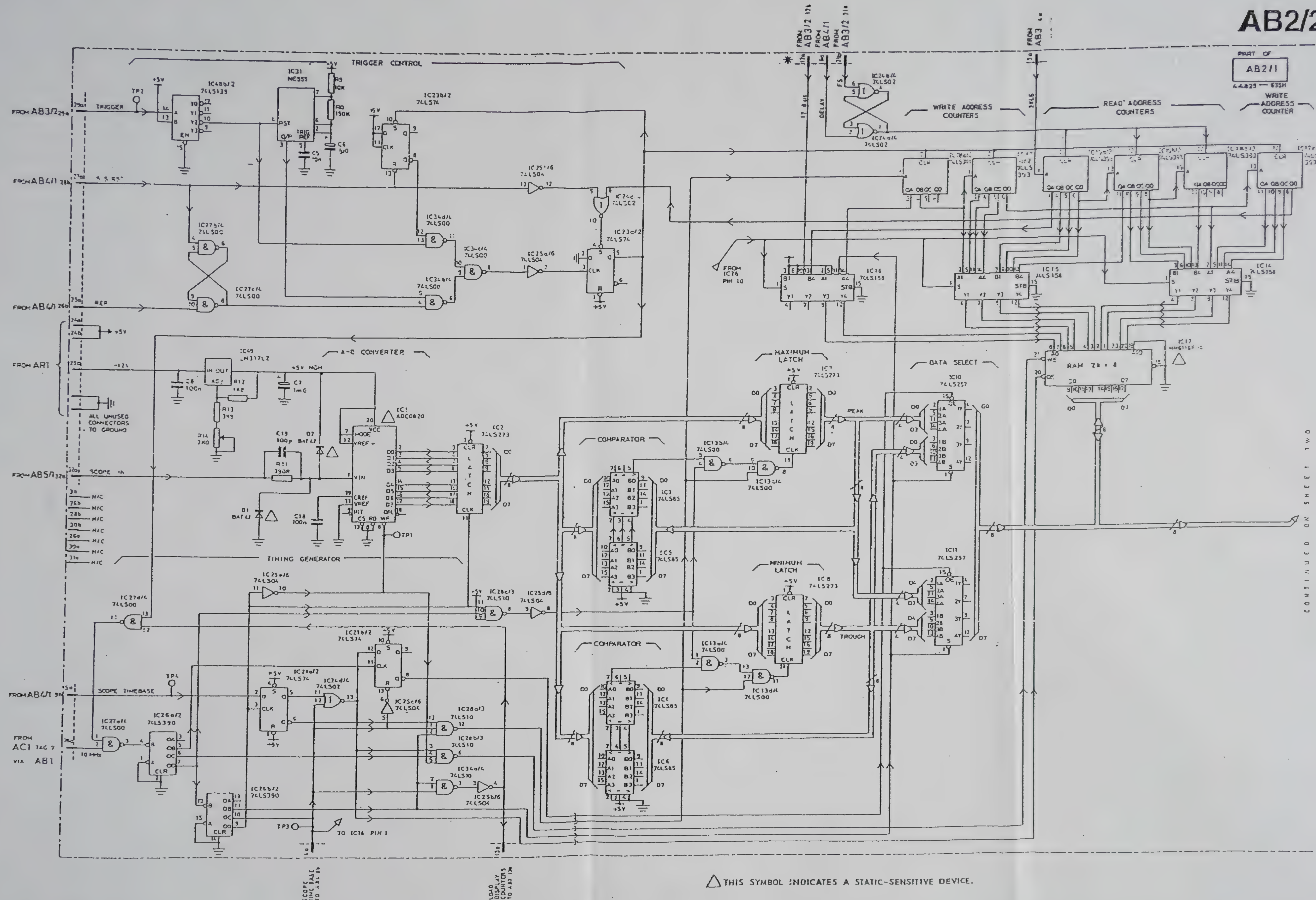


Fig. 7-19 Component layout of Digital scope board

Drg. No. 44829/635

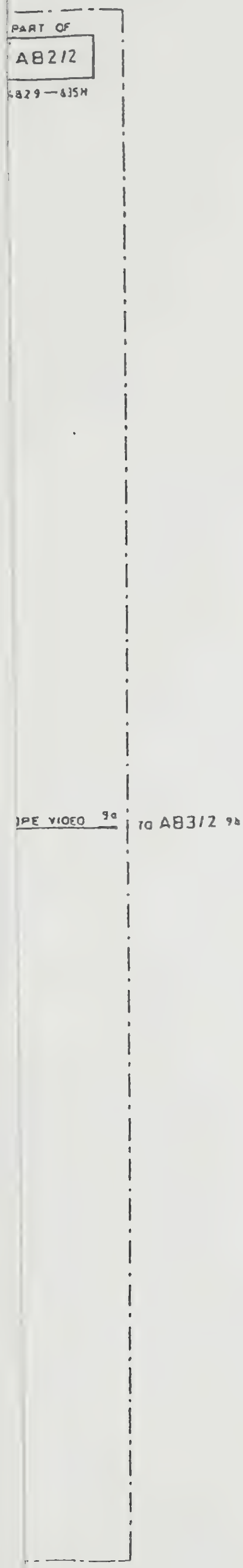
Motherboard AB1/1



THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE.

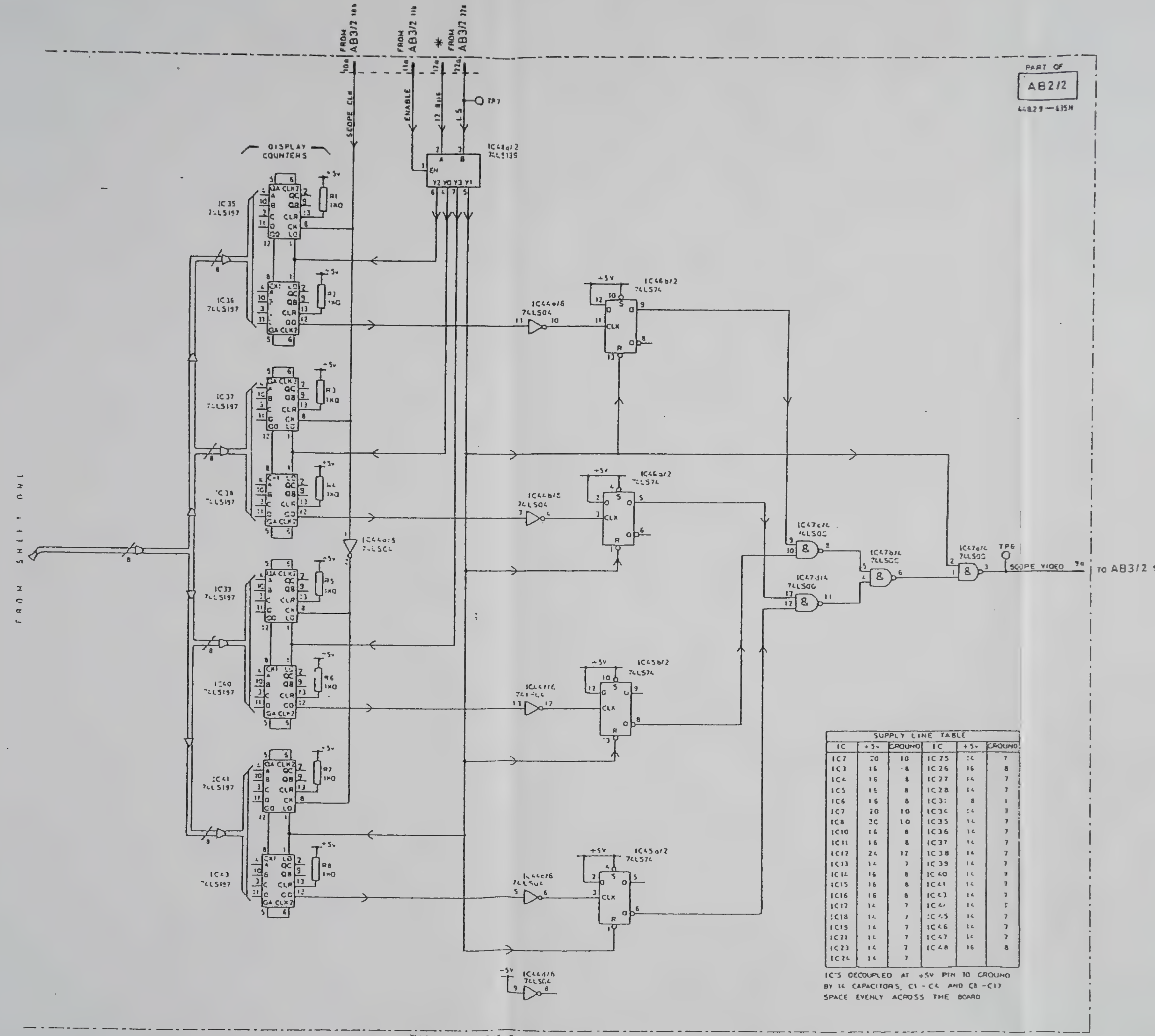
Drg. No. Z 44829/635 Sheet 1 Issue 4

Fig. 7-20 Circuit diagram of Digital scope board (ADC and timing)



Drg. No. Z 44829/635 Sheet 2 Issue cuit diagram of Digital scope board (Output)

Digital scope board AB2/2



SUPPLY LINE TABLE

IC	+5v	GROUND	IC	+5v	GROUND
IC2	20	10	IC25	14	7
IC3	16	8	IC26	16	8
IC4	16	8	IC27	14	7
IC5	16	8	IC28	14	7
IC6	16	8	IC33	8	1
IC7	20	10	IC34	14	7
IC8	20	10	IC35	14	7
IC10	16	8	IC36	14	7
IC11	16	8	IC37	14	7
IC12	24	12	IC38	14	7
IC13	14	7	IC39	14	7
IC14	16	8	IC40	14	7
IC15	16	8	IC41	14	7
IC16	16	8	IC43	14	7
IC17	14	7	IC44	14	7
IC18	14	7	IC45	14	7
IC19	14	7	IC46	14	7
IC21	14	7	IC47	14	7
IC23	14	7	IC48	16	8
IC24	14	7			

IC'S DECOUPLED AT +5V PIN TO GROUND BY 14 CAPACITORS, C1 - C4 AND C8 - C17 SPACE EVENLY ACROSS THE BOARD

Org. No. Z 44829/635 Sheet 2 Issue 2

Fig. 7·21 Circuit diagram of Digital scope board (Output)

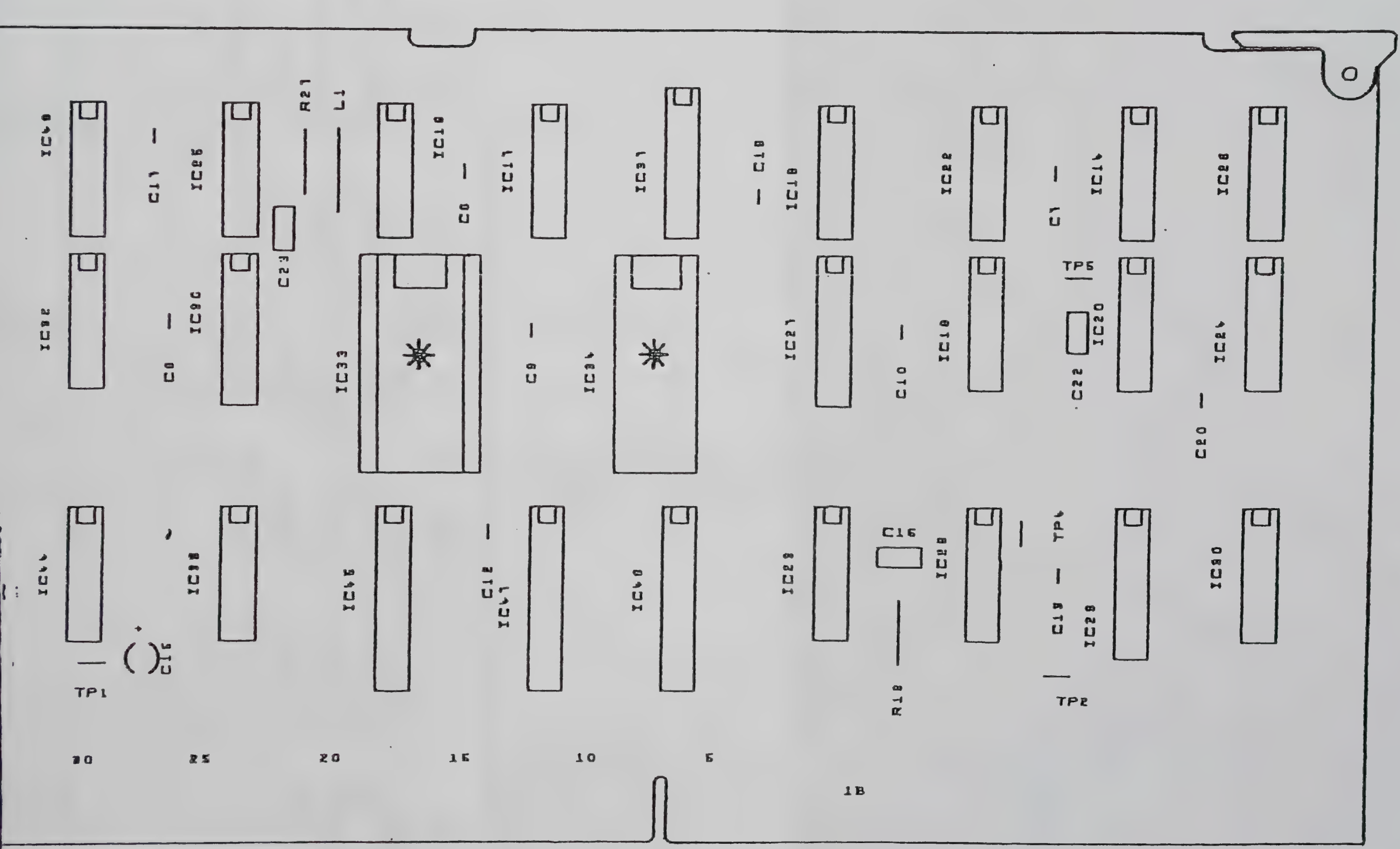
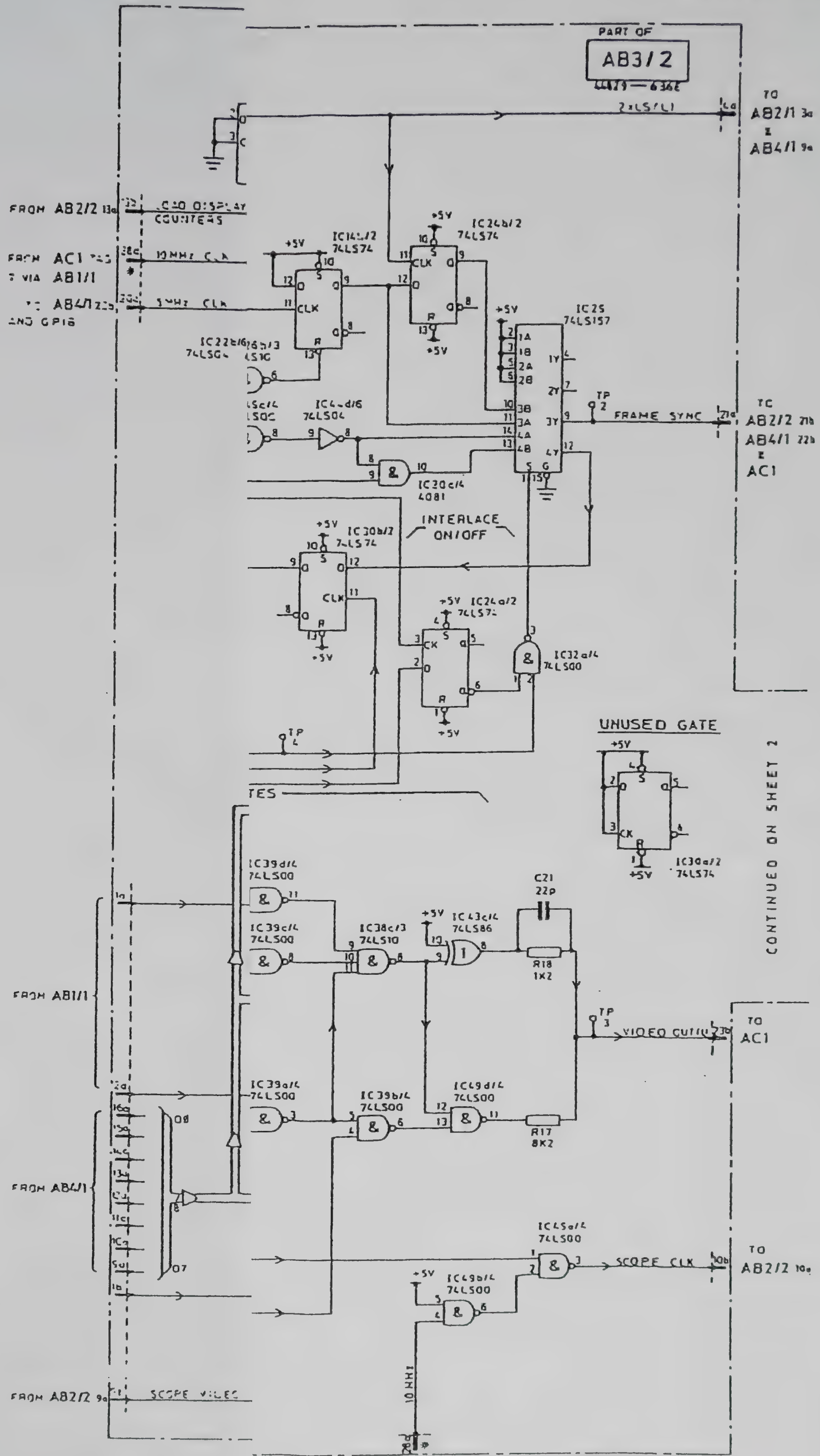


Fig. 7-22 Component layout of VDU board

Drg. No. 44829/636



Drg. No. Z 44829/636 Sheet 1 Is... *...t diagram of VDU board (Character generator)*

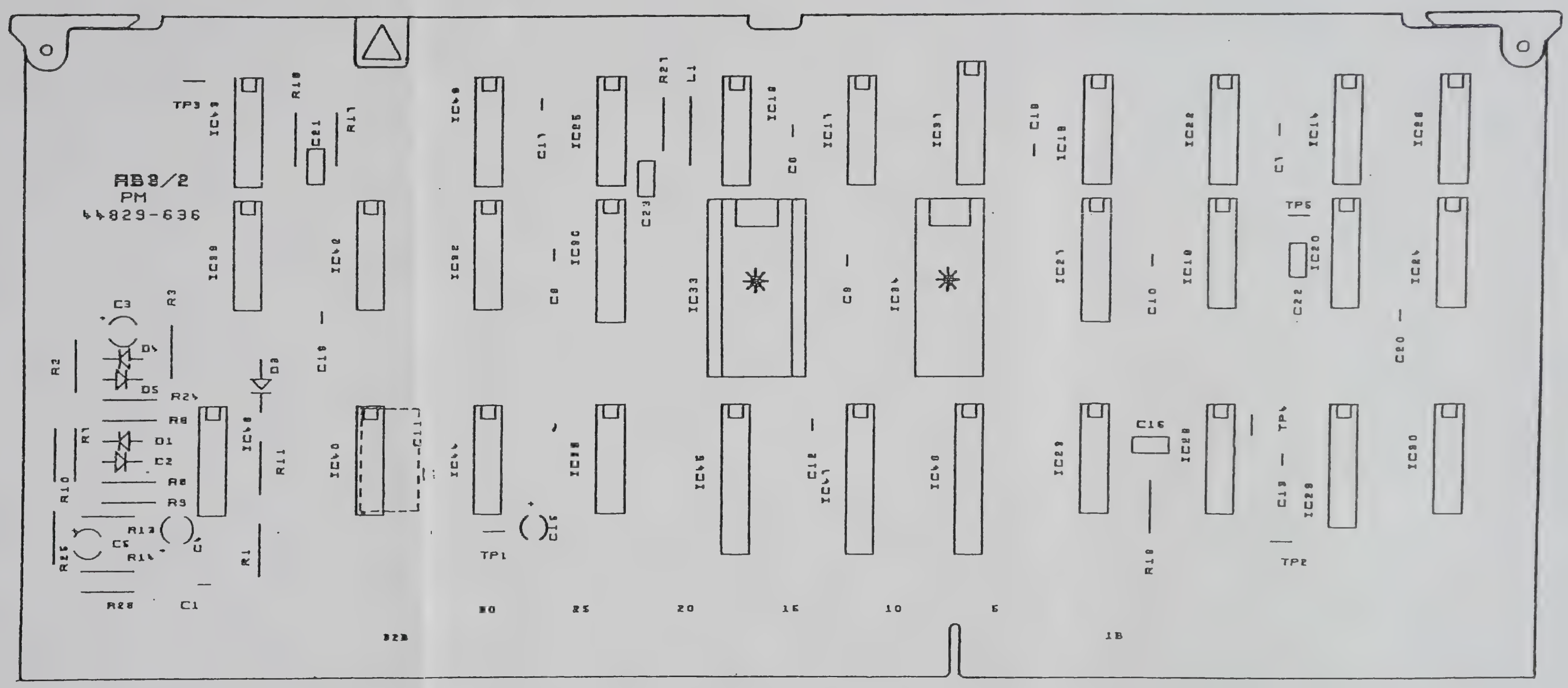
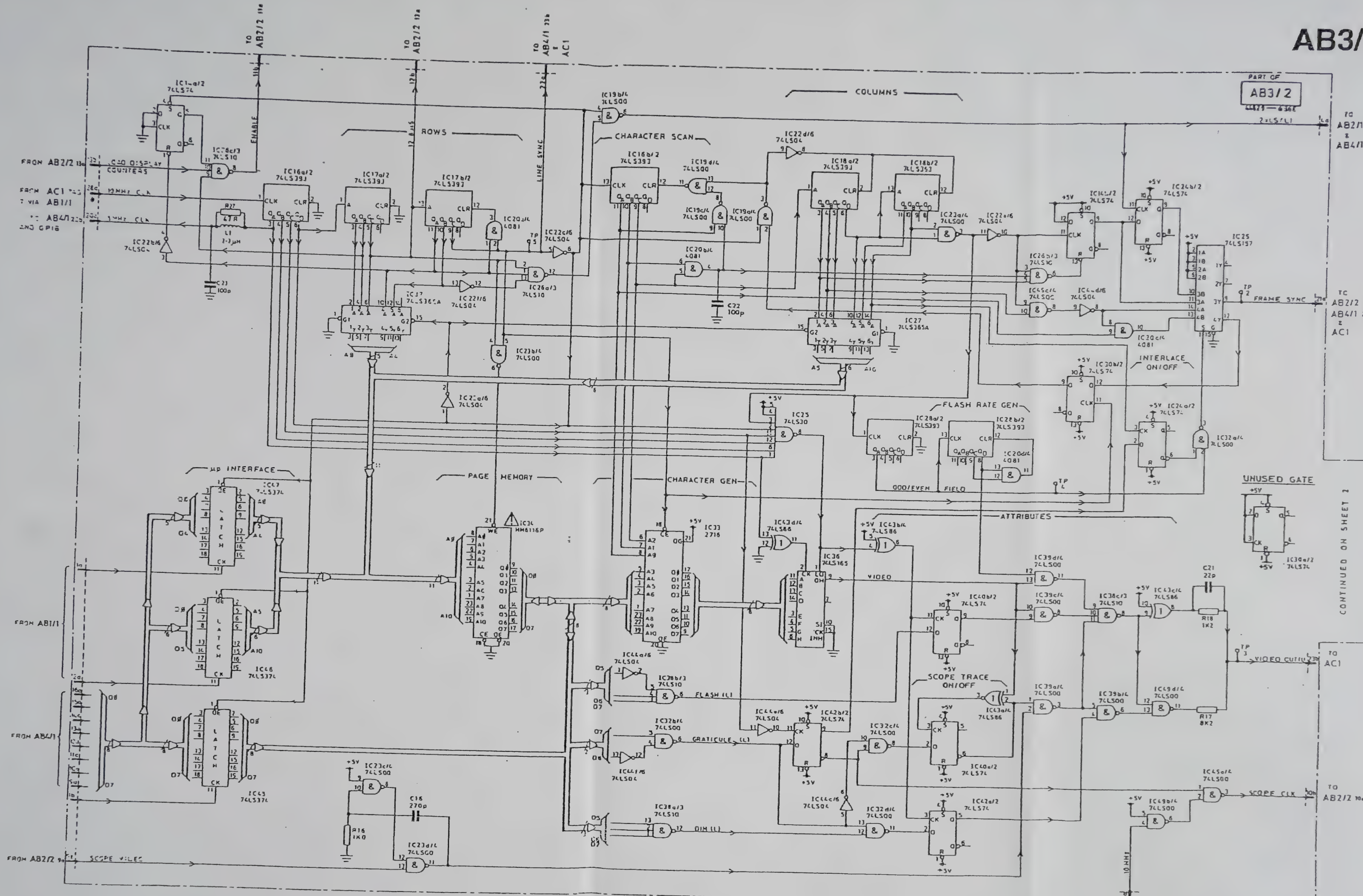


Fig. 7-22 Component layout of VDU board

Drg. No. 44829/636

Digital scope board AB2/2



⚠ THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE. * REPEATED ON THIS DRAWING FOR CIRCUIT CLARITY

Drg. No. Z 44829/636 Sheet 1 Issue 3

Fig. 7-23 Circuit diagram of VDU board (Character generator)

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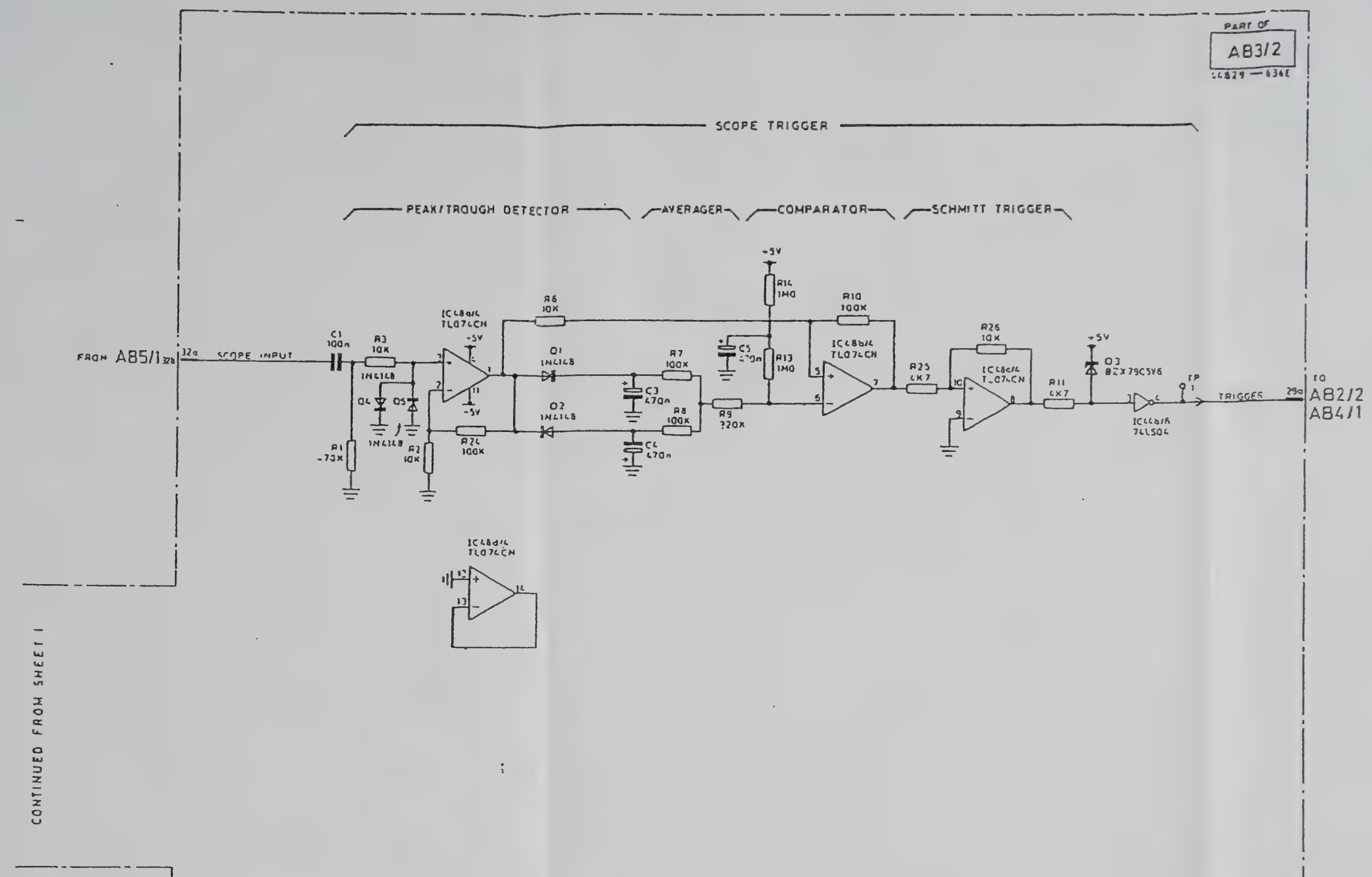
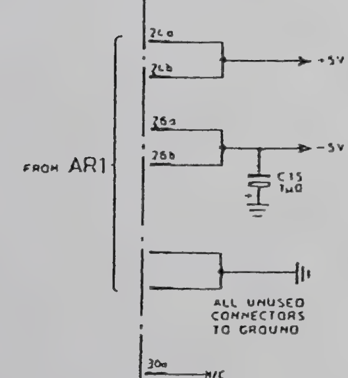
Drg. No. Z 44829/636 Sheet 2

Circuit diagram of VDU board (Scope trigger)

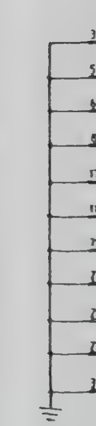
VDU board AB3/2





SUPPLY LINE TABLE					
IC	+5V	GROUND	IC	+5V	GROUND
IC15	14	7	IC32	14	7
IC16	14	7	IC33	24	12
IC17	14	7	IC34	24	12
IC18	14	7	IC36	18	8
IC19	14	7	IC37	16	8
IC20	14	7	IC38	14	7
IC22	14	7	IC39	14	7
IC23	14	7	IC40	14	7
IC24	14	7	IC42	14	7
IC25	14	7	IC43	14	7
IC26	14	7	IC44	14	7
IC27	16	8	IC45	20	10
IC28	14	7	IC46	20	10
IC29	16	8	IC47	20	10
IC30	14	7	IC49	14	7

ICs DECOUPLED AT +5V PIN TO GROUND, BY 12 CAPACITORS C6-C13 AND C17-C20 10n, SPACED EVENLY ACROSS THE BOARD



Drg. No. Z 44829/636 Sheet 2 Issue 2

Fig. 7-24 Circuit diagram of VDU board (Scope trigger)

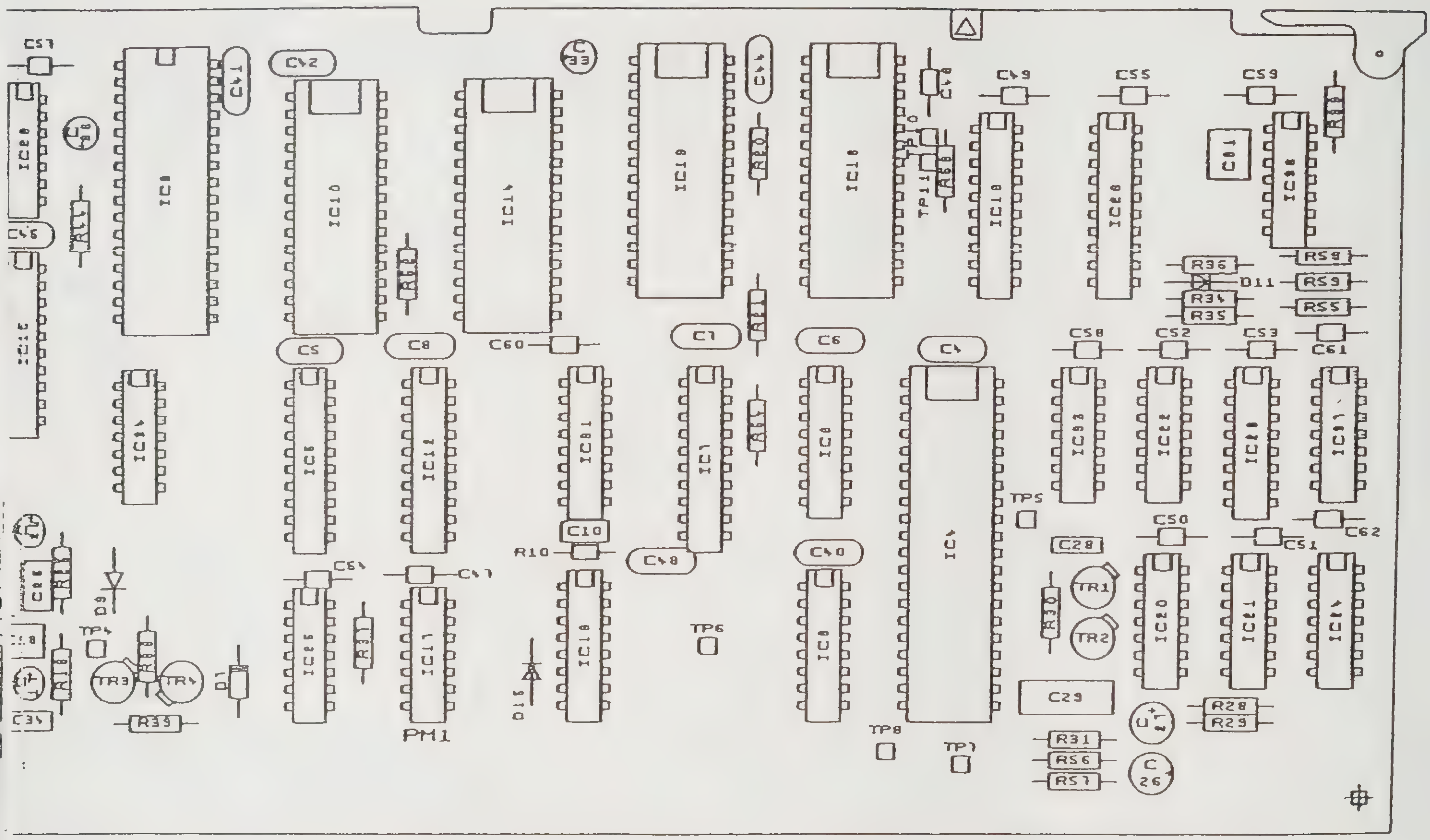
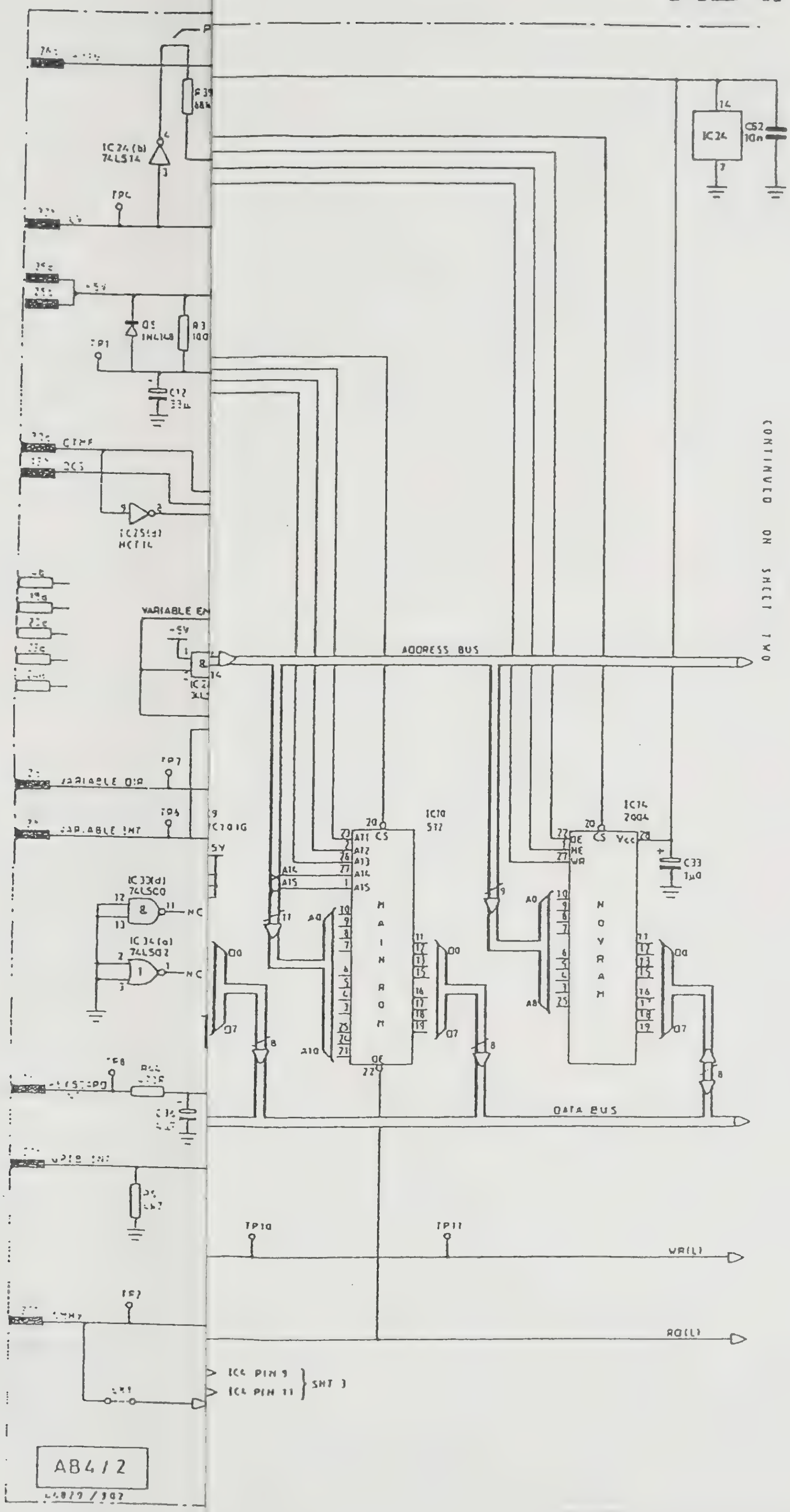


Fig. 7-25 Component layout of Microprocessor board

Drg. No. 44829/902



Drg. No. Z 44829/902 Sheet 1 ram of Microprocessor board (CPU and memory)

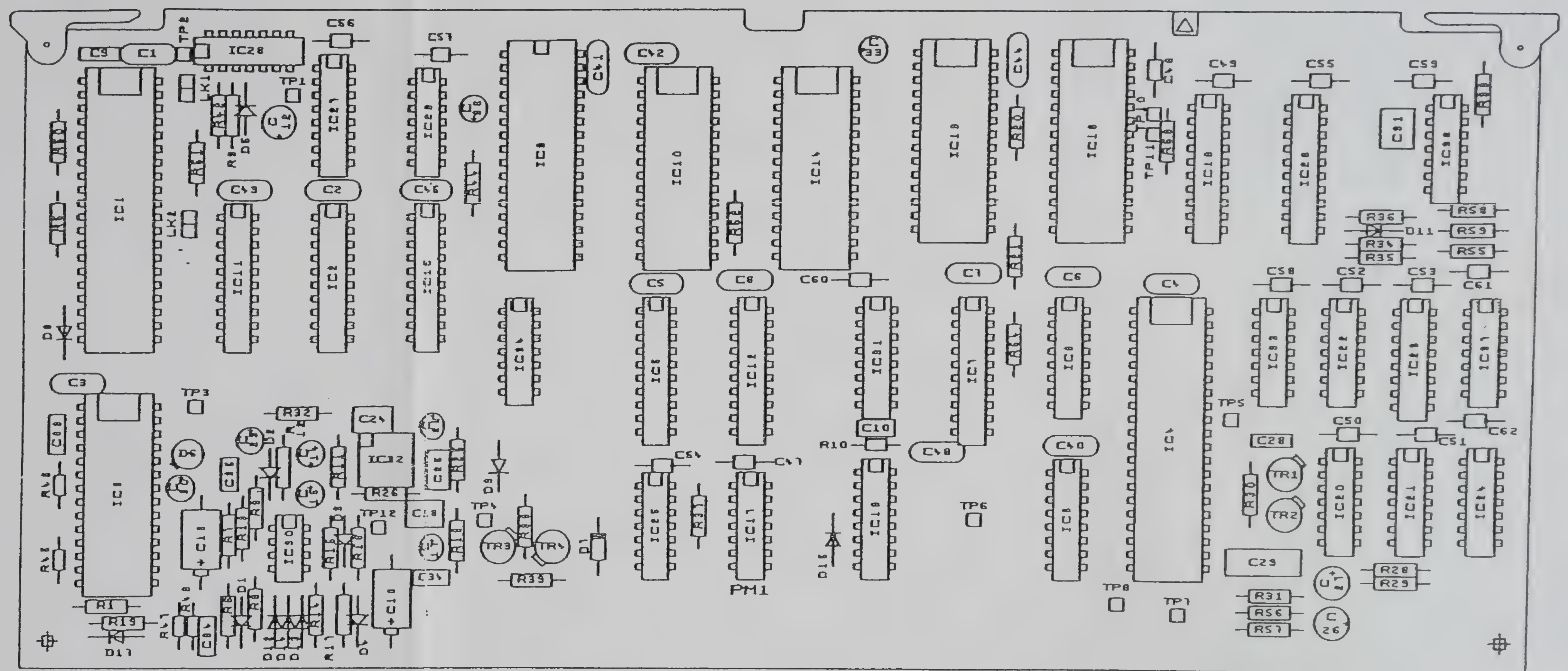
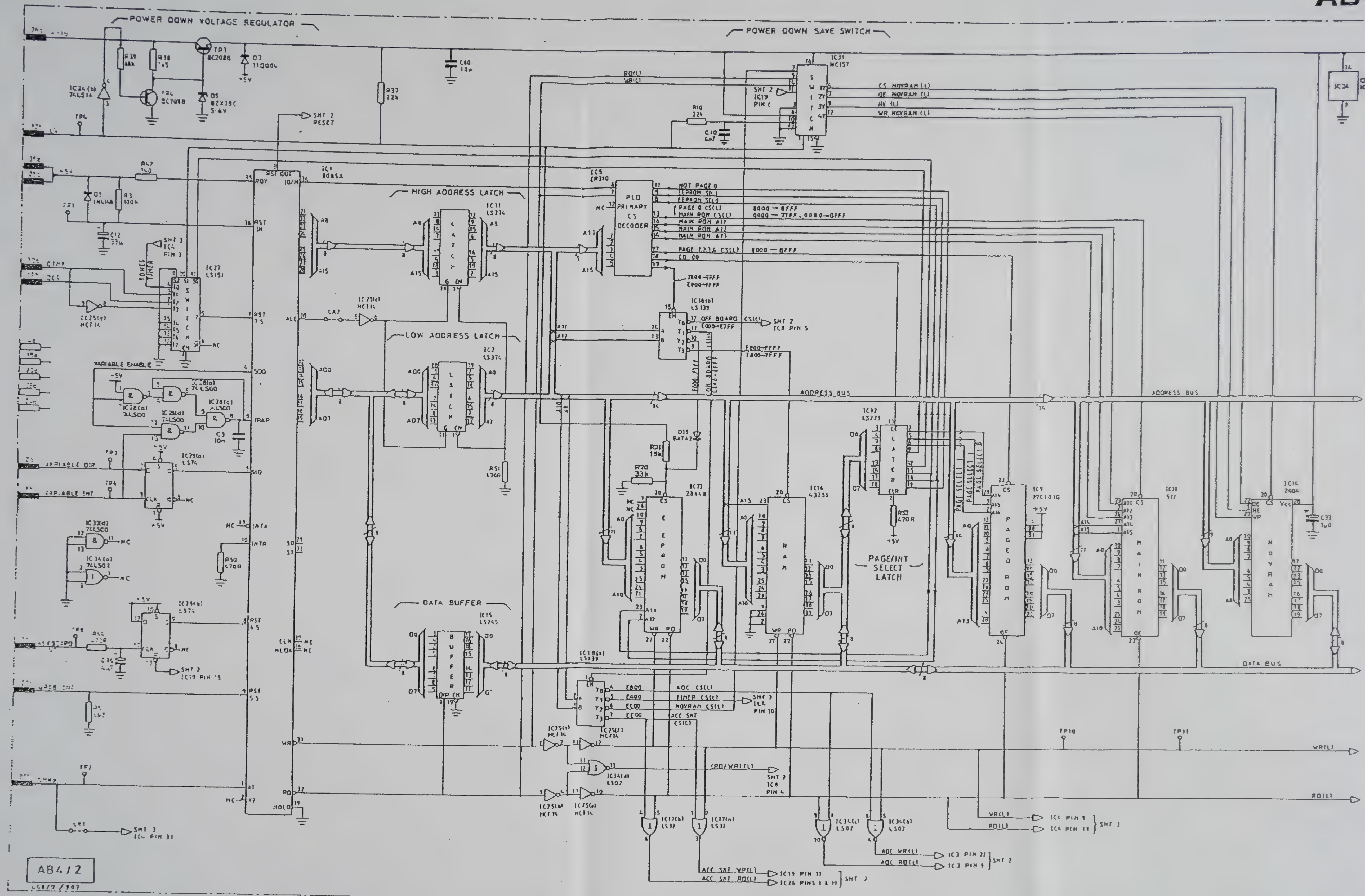


Fig. 7-25 Component layout of Microprocessor board

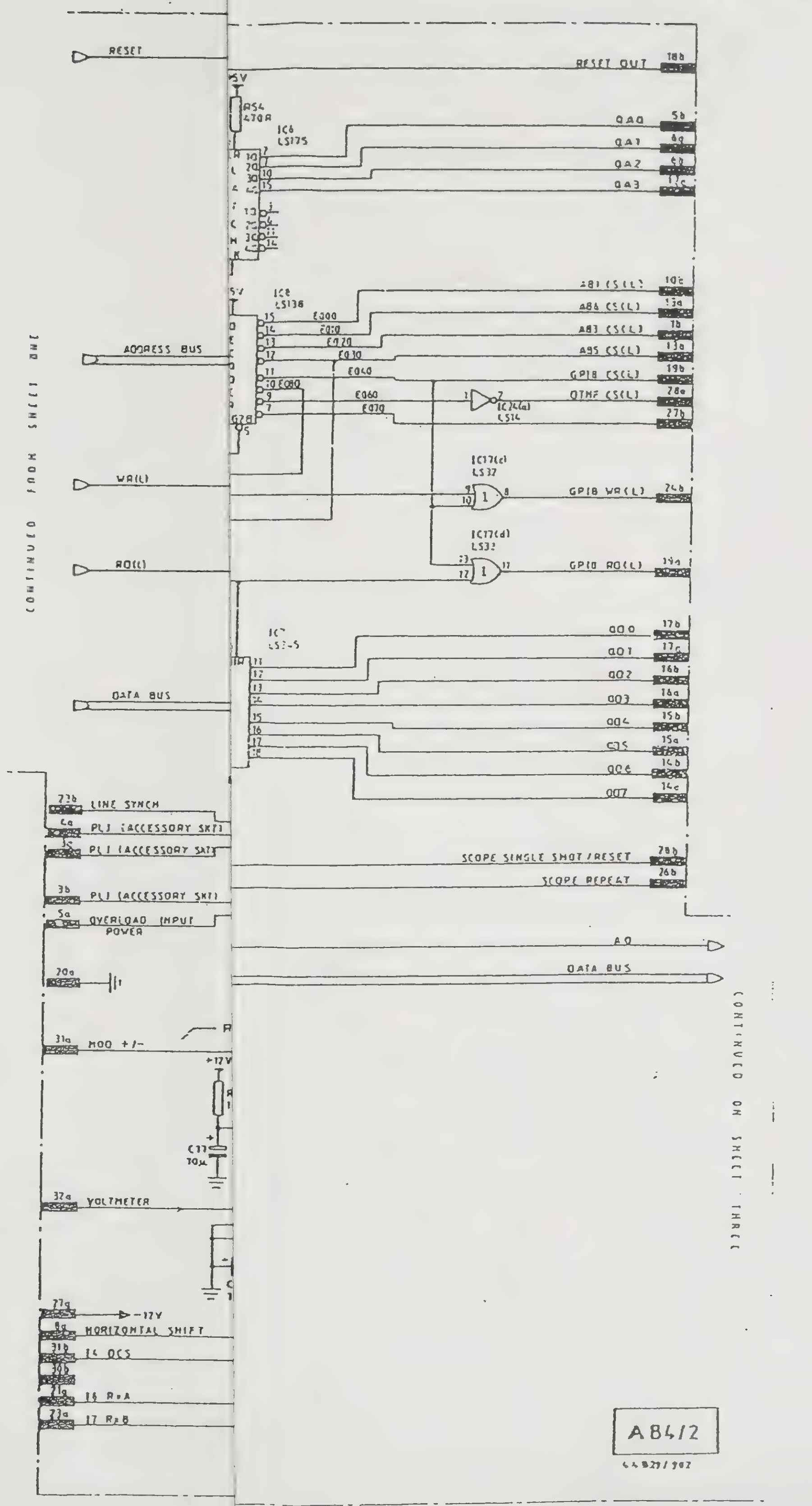
Drg. No. 44829/902

VDU board AB3/2



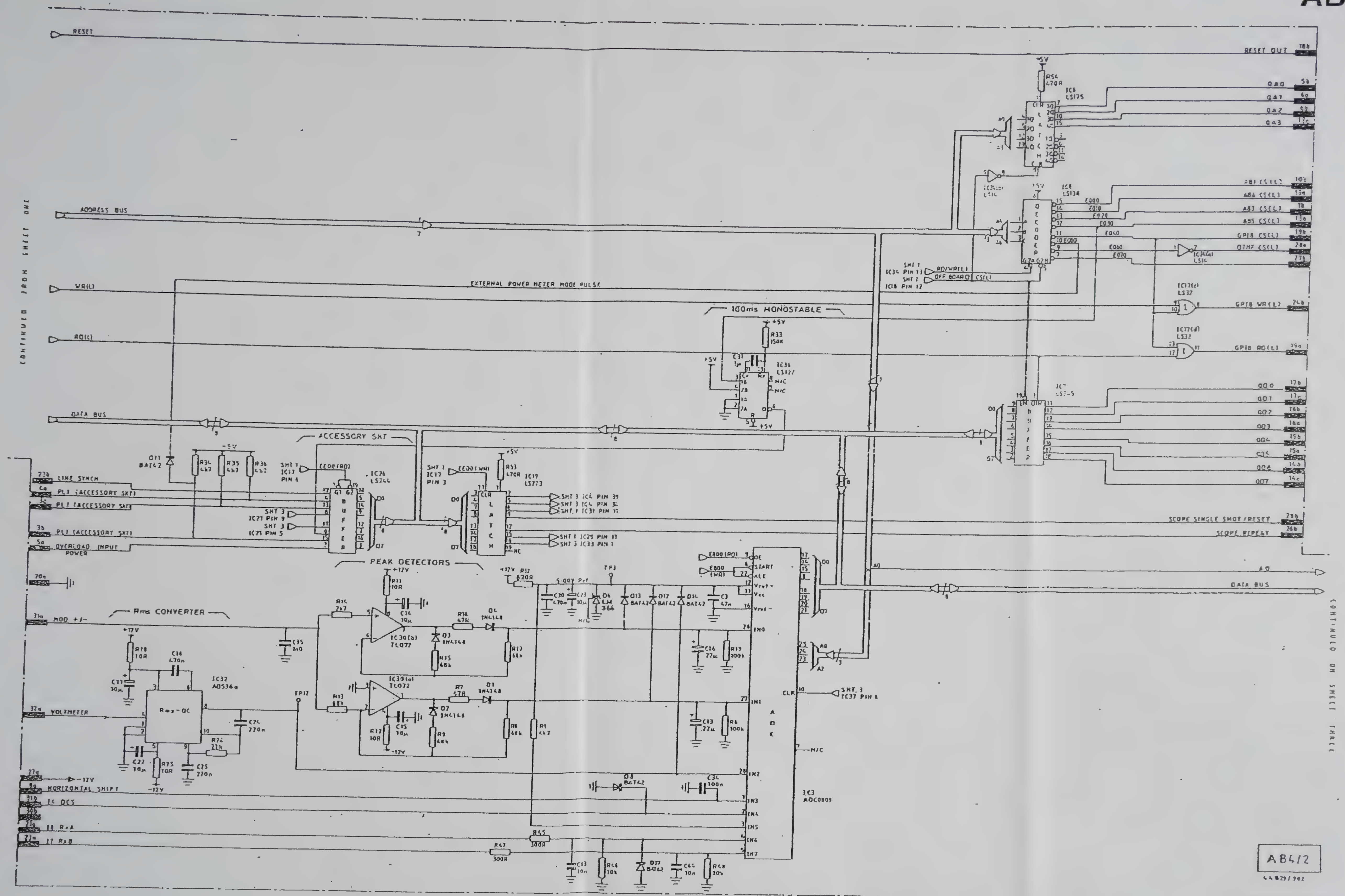
Drg. No. Z 44829/902 Sheet 1 Issue 1

Fig. 7-26 Circuit diagram of Microprocessor board (CPU and memory)



Drg. No. Z 44829/902 Sheet 2 *Circuit diagram of Microprocessor board (ADC)*

Microprocessor board AB4/2



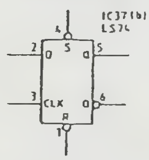
Drg. No. Z 44829/902 Sheet 2 of 3 Issue 2

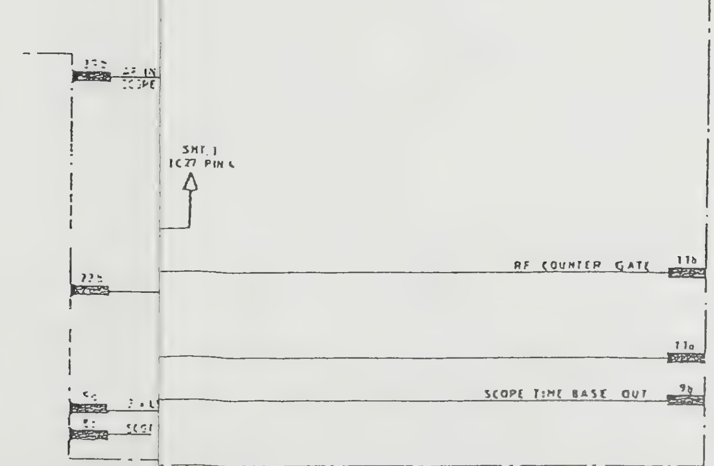
Fig. 7-27 Circuit diagram of Microprocessor board (ADC)

AB4/2
44829/902

SUPPLY LINE TABLE			
IC	+5V	GROUND	CAPACITOR
1	40	20	1 47n
2	20	10	2 47n
3		11	
4	1	21	4 47n
5	20	10	5 47n
6	16	8	6 47n
7	20	10	7 47n
8	16	8	40 10n
9	32	16	41 47n
10	28	14	42 47n
11	20	10	43 47n
12	20	10	8 47n
13	28	14	44 47n
14		14	
15	20	10	45 47n
16	28	14	46 10n
17	14	7	47 10n
18	16	8	48 47n
19	20	10	49 10n
20	14	7	50 10n
21	14	7	51 10n
22	14	7	52 10n
23	16	8	53 10n
25	14	7	54 10n
26	20	10	55 10n
27	16	8	56 10n
28	14	7	
29	14	7	57 10n
31		8	
33	14	7	58 10n
34	14	7	
36	14	7	59 10n
37	14	7	61 10n

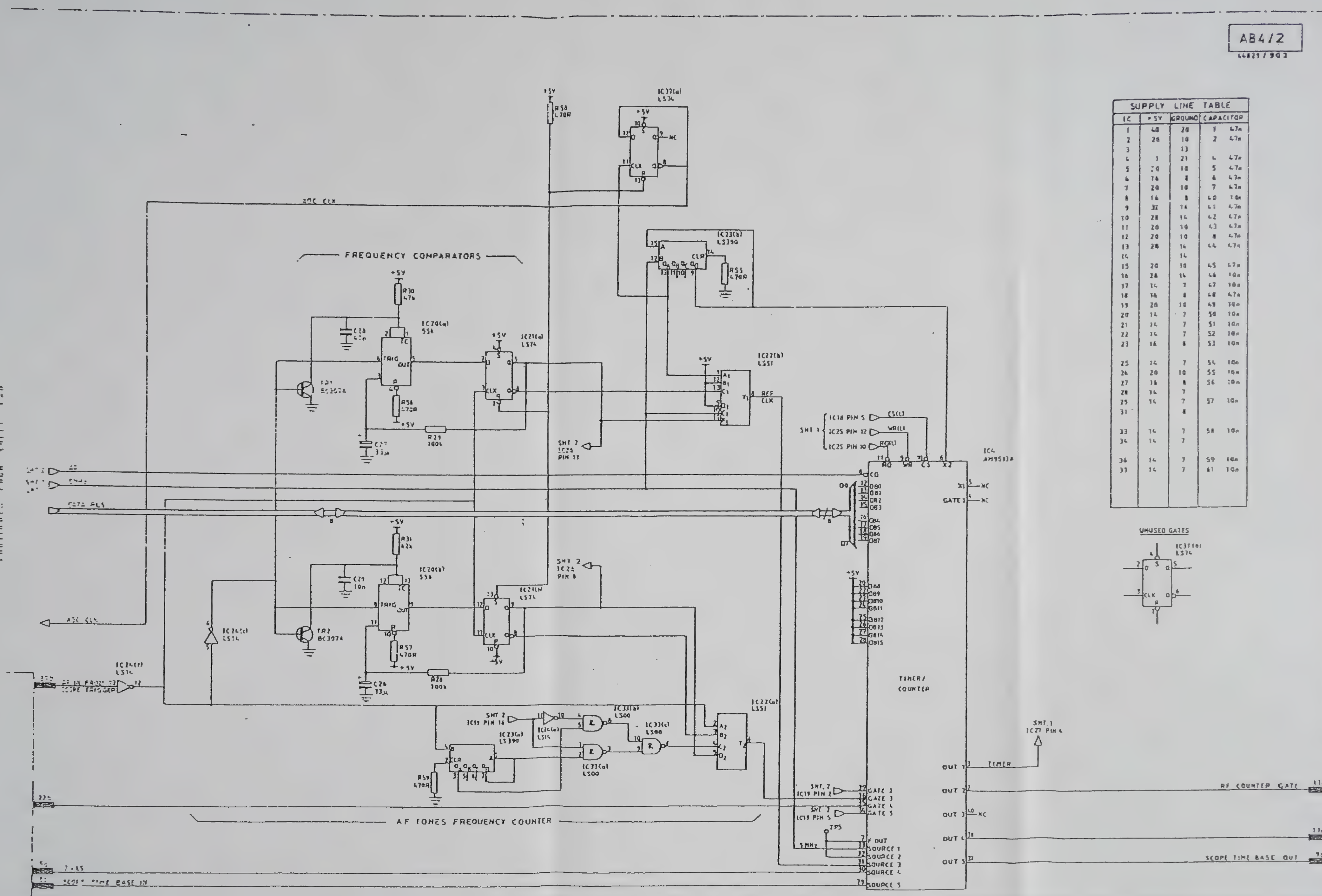
UNUSED GATES





Org. No. Z 44829/902 Sheet 3 *of Microprocessor board (Programmable divider)*

Microprocessor board AB4/2



SUPPLY LINE TABLE				
IC	+5V	GROUND	CAPACITOR	
1	40	20	1	47n
2	20	10	2	47n
3		13		
4	1	21	4	47n
5	20	10	5	47n
6	14	8	6	47n
7	20	10	7	47n
8	16	8	40	10n
9	32	16	41	47n
10	28	14	42	47n
11	20	10	43	47n
12	20	10	8	47n
13	28	14	44	47n
14		14		
15	20	10	45	47n
16	28	14	46	10n
17	14	7	47	10n
18	16	8	48	47n
19	20	10	49	10n
20	14	7	50	10n
21	14	7	51	10n
22	14	7	52	10n
23	16	8	53	10n
25	14	7	54	10n
26	20	10	55	10n
27	16	8	56	10n
28	14	7		
29	14	7	57	10n
31		8		
33	14	7	58	10n
34	14	7		
36	14	7	59	10n
37	14	7	61	10n

Drg. No. Z 44829/902 Sheet 3 Issue 1

Fig. 7-28 Circuit diagram of Microprocessor board (Programmable divider)

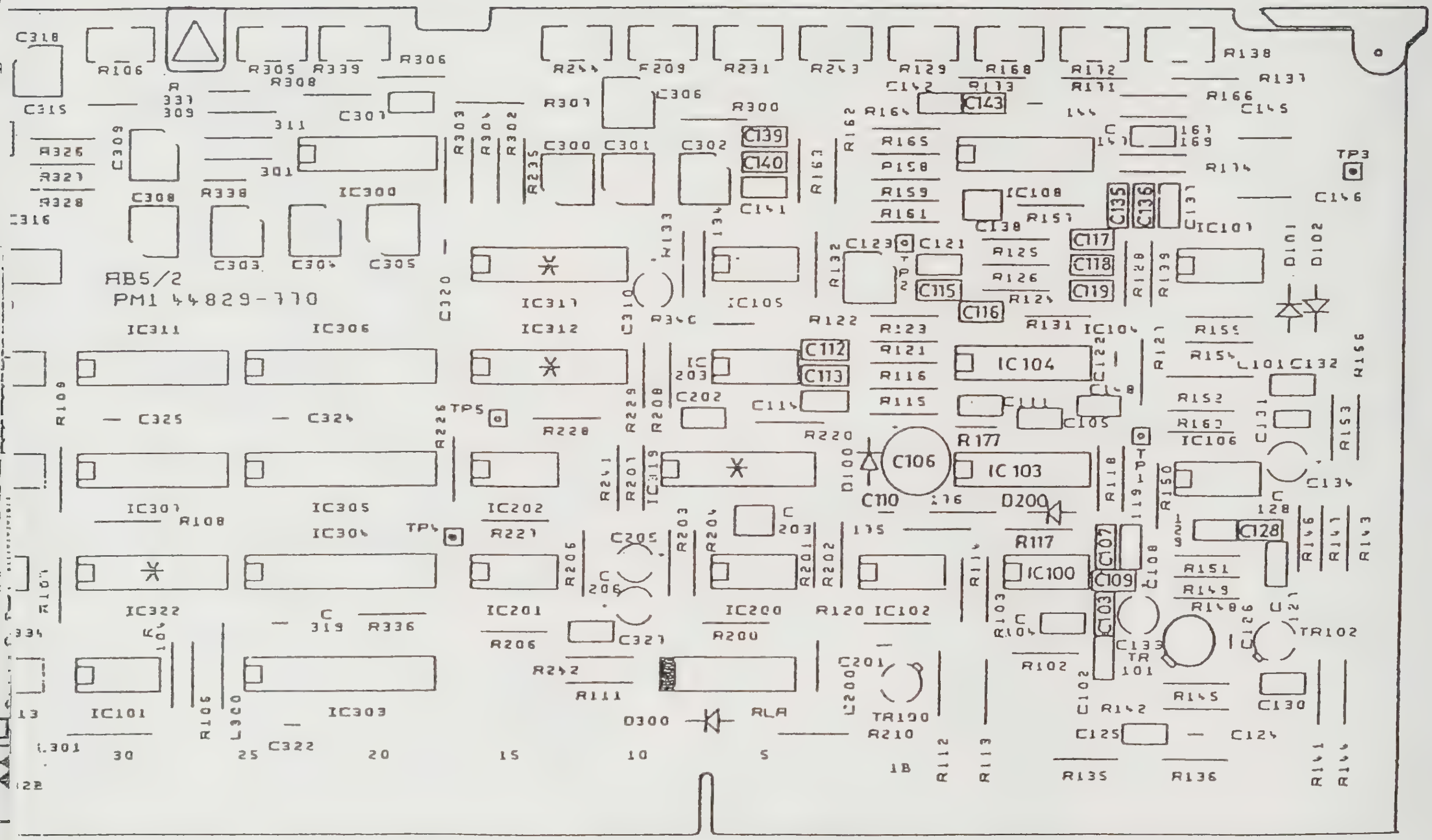
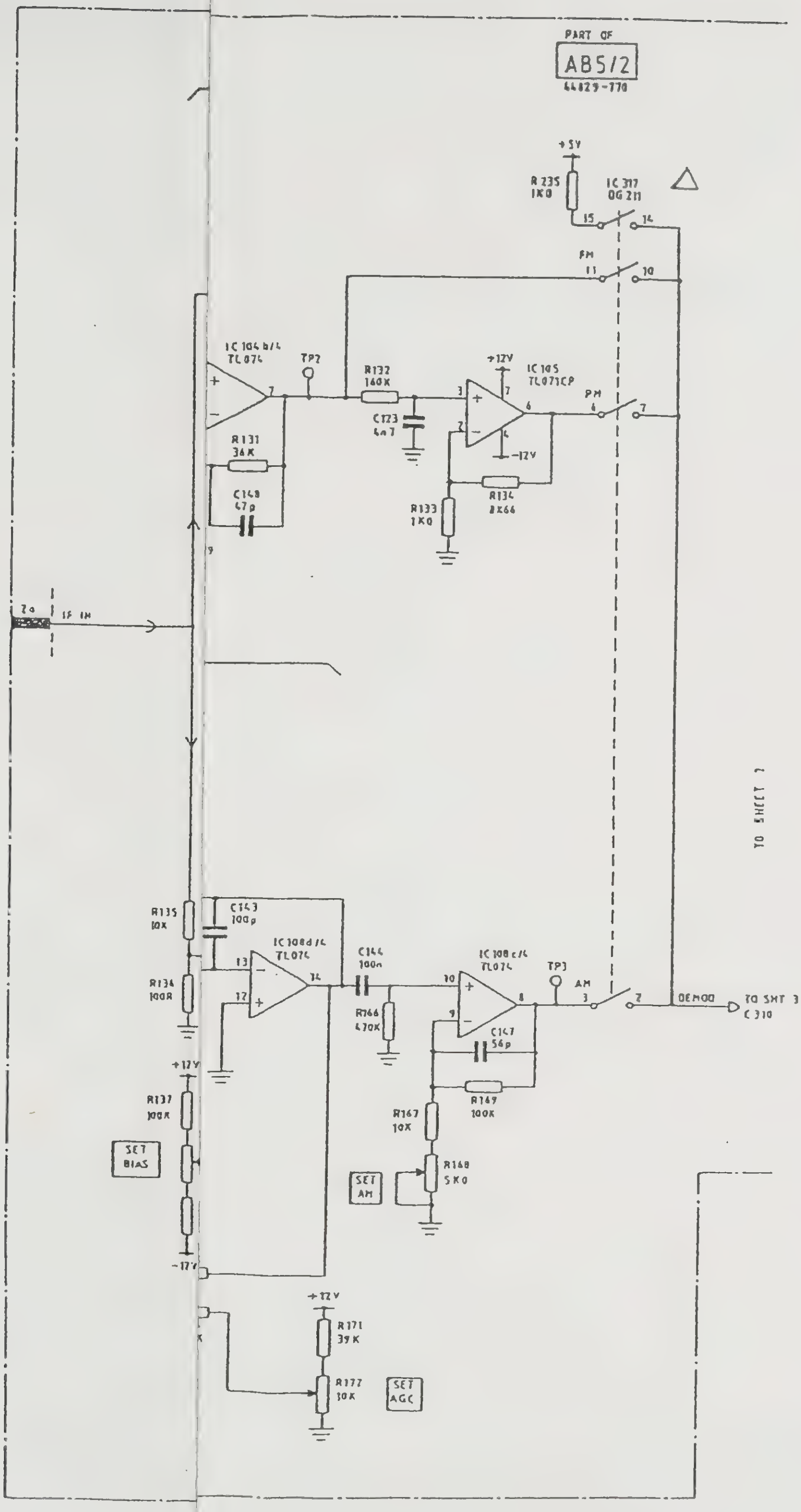


Fig. 7-29 Component layout of Demodulation and scope board

Drg. No. 44829/770



Drg. No. Z 44829/770 Sheet *Demodulation and scope board (IF demodulation)*

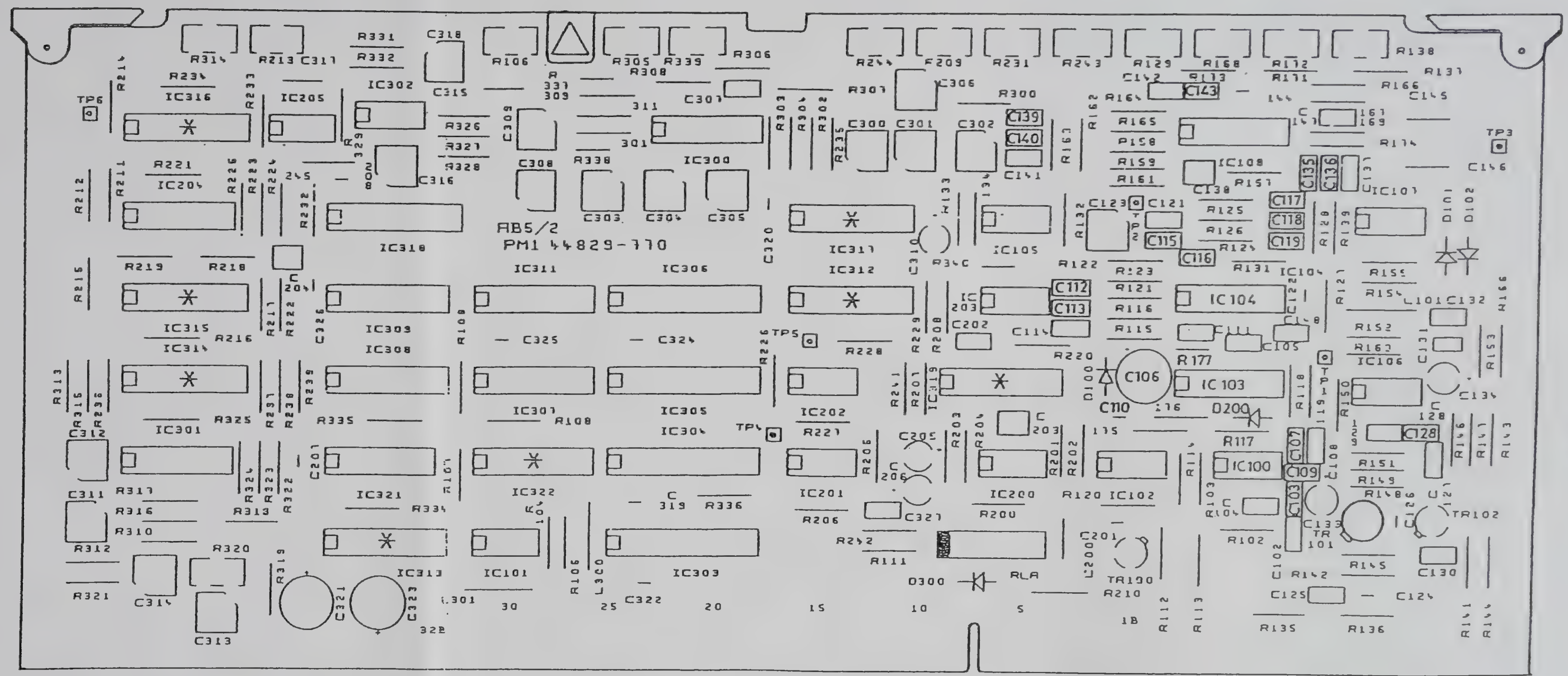
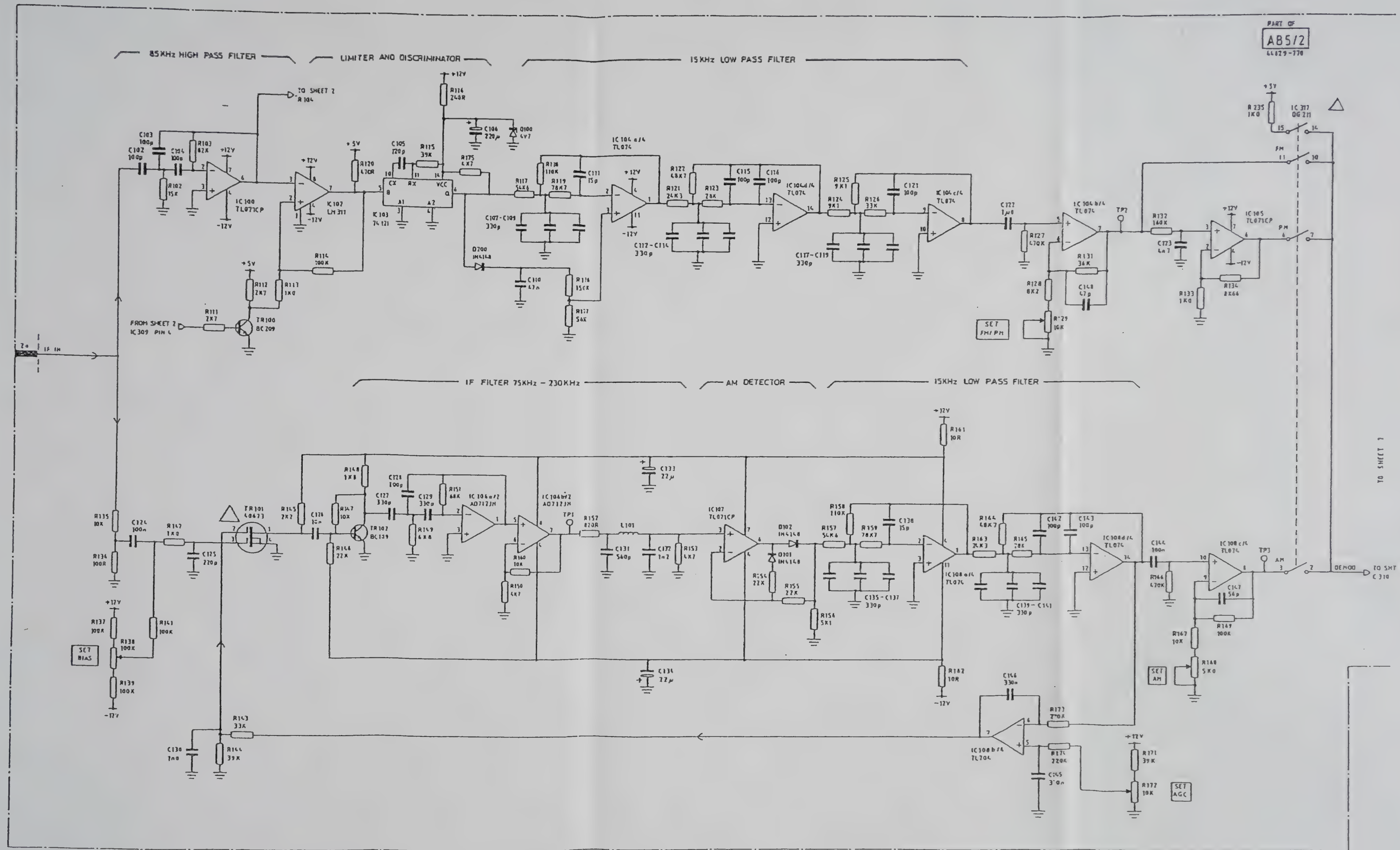


Fig. 7-29 Component layout of Demodulation and scope board

Drg. No. 44829/770

Microprocessor board AB4/2

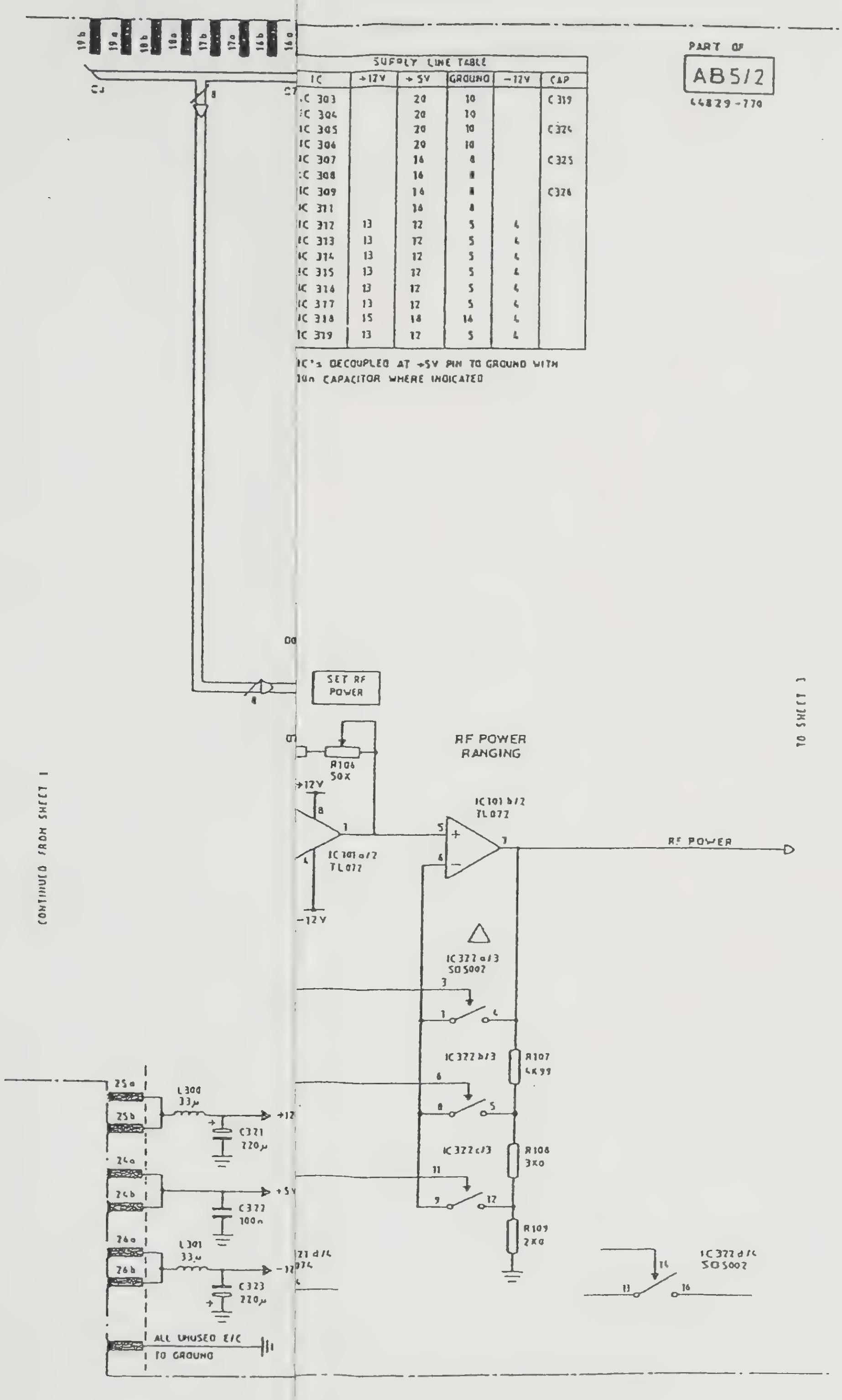


THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE.

Drg. No. Z 44829/770 Sheet 1 Issue 2

Fig. 7-30 Circuit diagram of Demodulation and scope board (IF demodulation)

46882-114B
Dec. 91

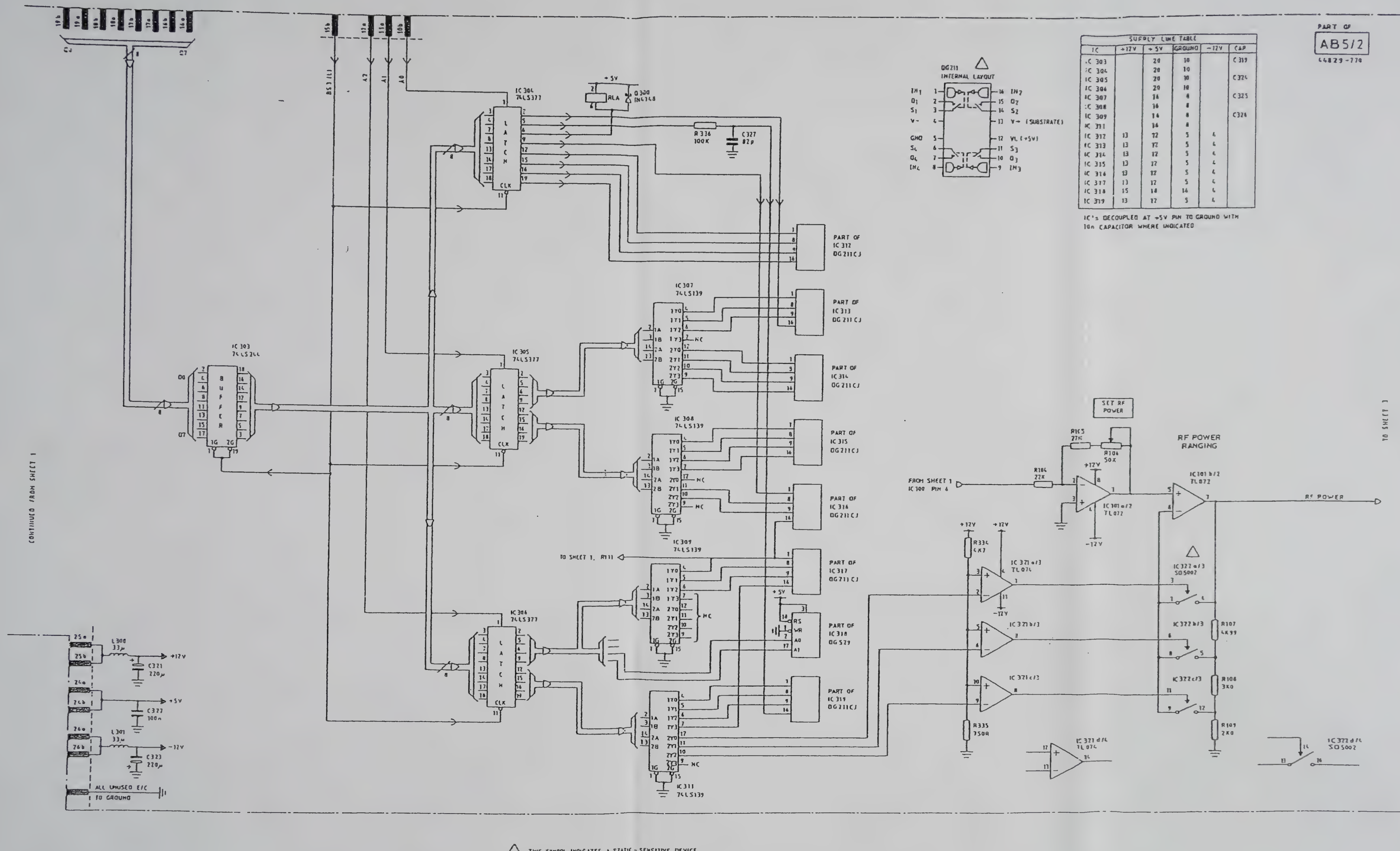


SUPPLY LINE TABLE					
IC	+12V	+5V	GROUND	-12V	CAP
IC 303		20	10		C319
IC 304		20	10		
IC 305		20	10		C324
IC 306		20	10		
IC 307		16	8		C325
IC 308		16	8		
IC 309		16	8		C326
IC 311		16	8		
IC 312	13	12	5	4	
IC 313	13	12	5	4	
IC 314	13	12	5	4	
IC 315	13	12	5	4	
IC 316	13	12	5	4	
IC 317	13	12	5	4	
IC 318	15	18	14	4	
IC 319	13	12	5	4	

IC's DECOUPLED AT +5V PIN TO GROUND WITH 10n CAPACITOR WHERE INDICATED

Drg. No. Z 44829/770 Sheet 2 Issue *f* *Demodulation and scope board (Switching)*

Demodulation and scope board AB5/2



SUPPLY LINE TABLE					
IC	+12V	+5V	GROUND	−12V	CAP
IC 303		20	10		C319
IC 304		20	10		
IC 305		20	10		C324
IC 306		20	10		
IC 307		16	8		C325
IC 308		16	8		
IC 309		16	8		C326
IC 311		16	8		
IC 312	13	12	5	4	
IC 313	13	12	5	4	
IC 314	13	12	5	4	
IC 315	13	12	5	4	
IC 316	13	12	5	4	
IC 317	13	12	5	4	
IC 318	15	18	14	4	
IC 319	13	12	5	4	

IC's DECOUPLED AT +5V PIN TO GROUND WITH 10n CAPACITOR WHERE INDICATED

Drg. No. Z 44829/770 Sheet 2 Issue 1

Fig. 7-31 Circuit diagram of Demodulation and scope board (Switching)

46882-114B
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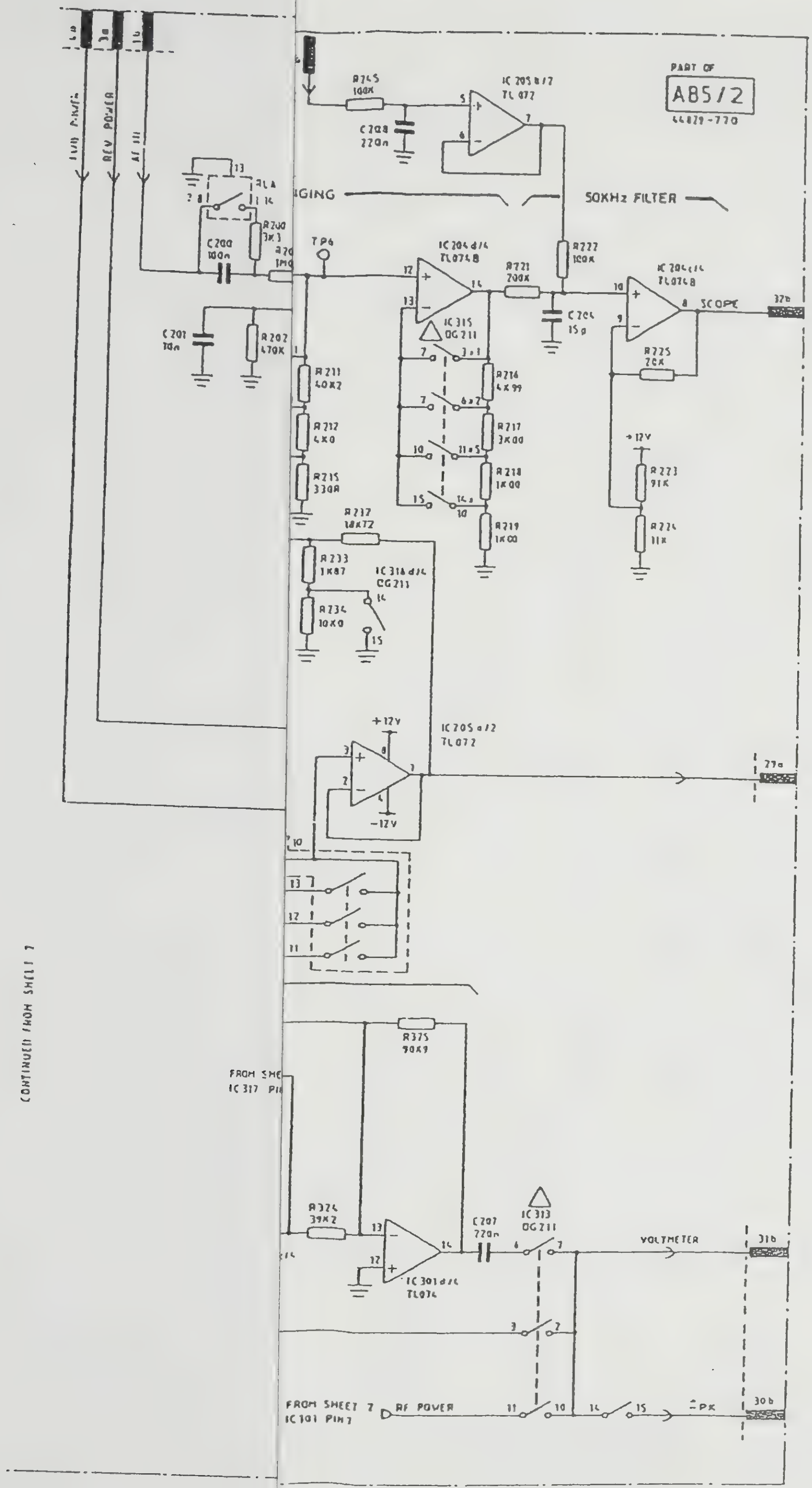
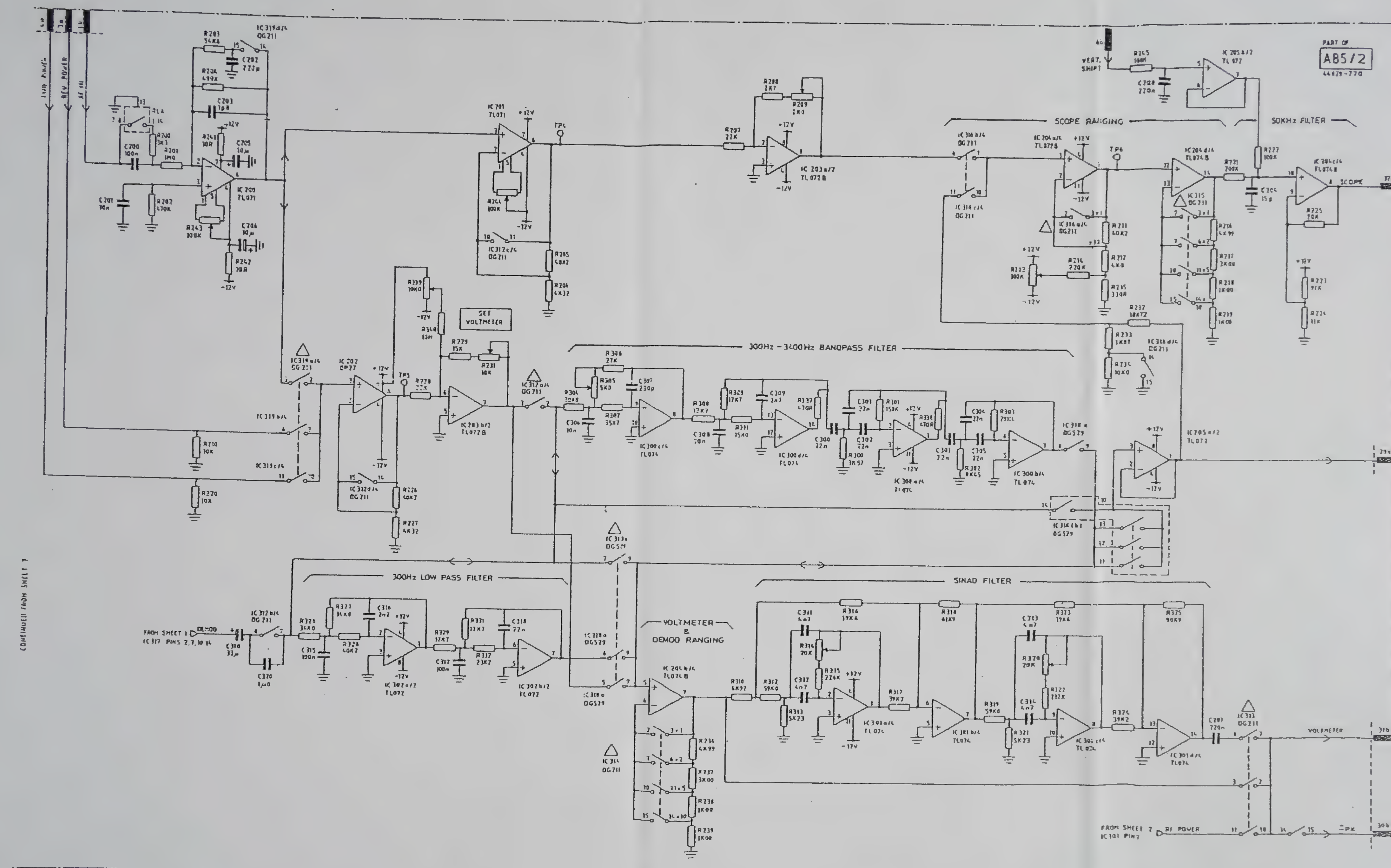


Drg. No. Z 44829/770 Sheet 3 Issue 2 *ulation and scope board (Ranging and filters)*

Demodulation and scope board AB5/2



Drg. No. Z 44829/770 Sheet 3 Issue 2

Fig. 7-32 Circuit diagram of Demodulation and scope board (Ranging and filters)

AB6/1

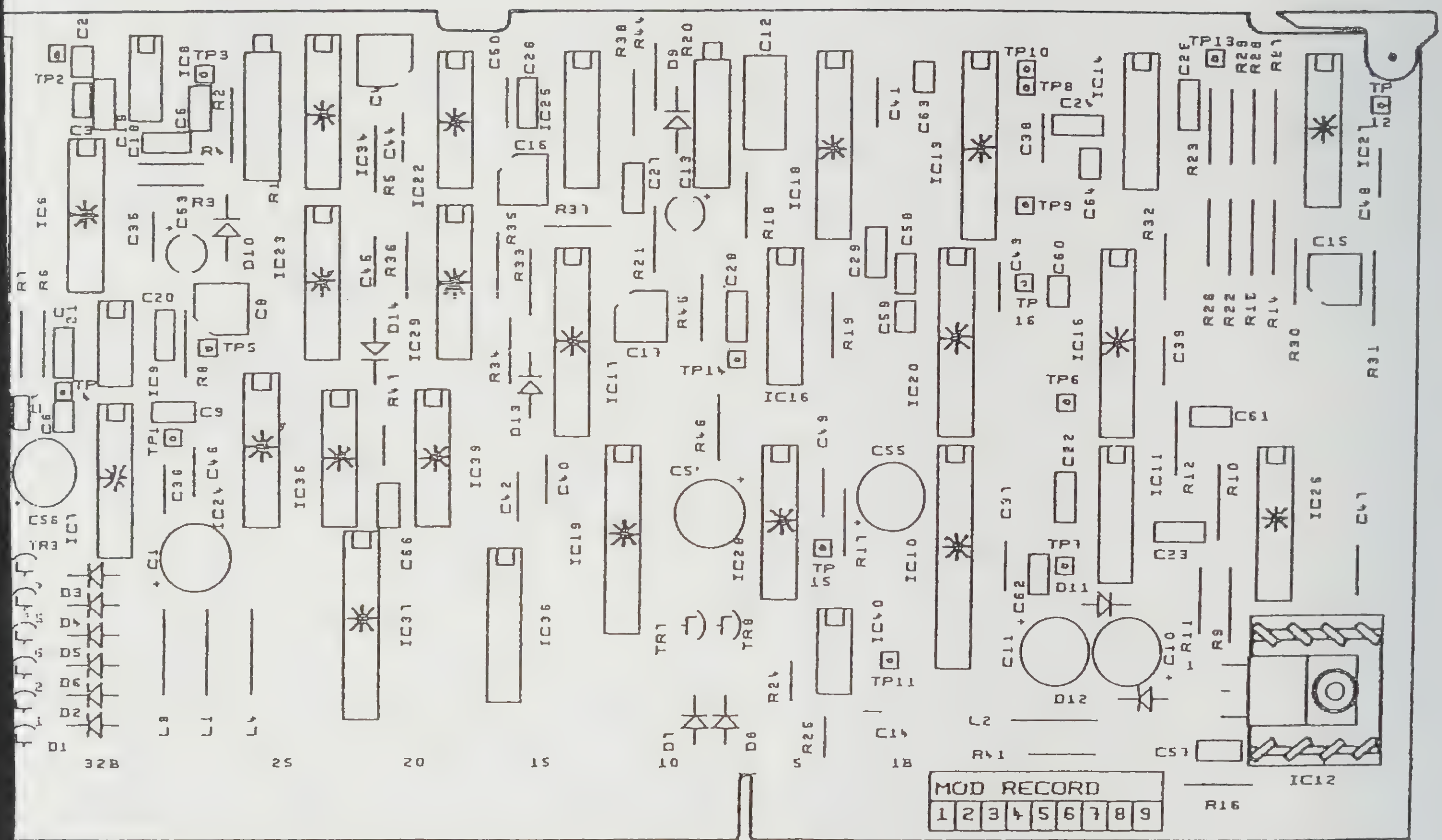
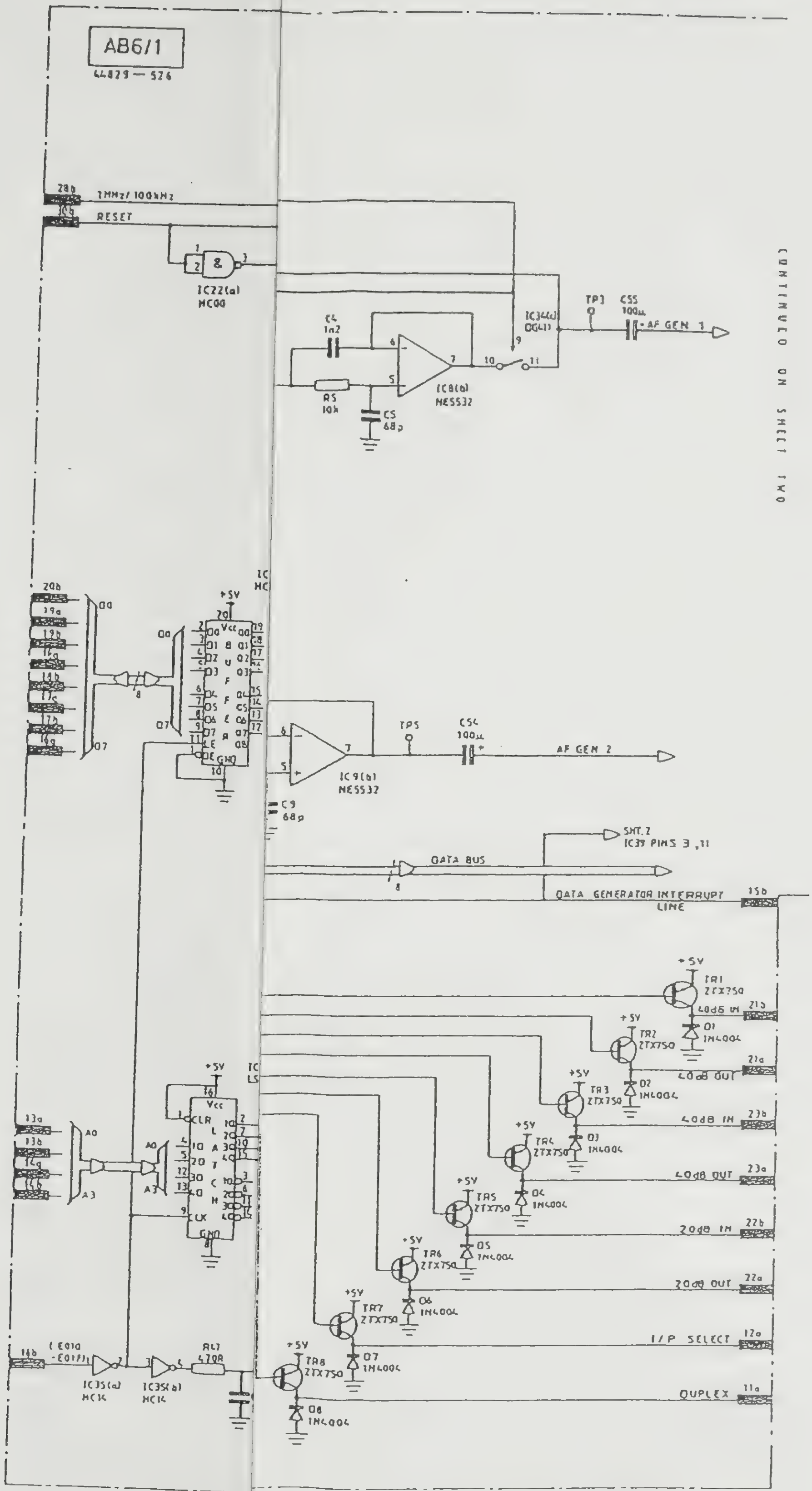


Fig. 7-33 Component layout of AF synthesizer board

Drg. No. 44829/526



Drg. No. Z 44829/526 Sheet 1 Issu*cuit diagram of AF synthesizer board (Dividers)*

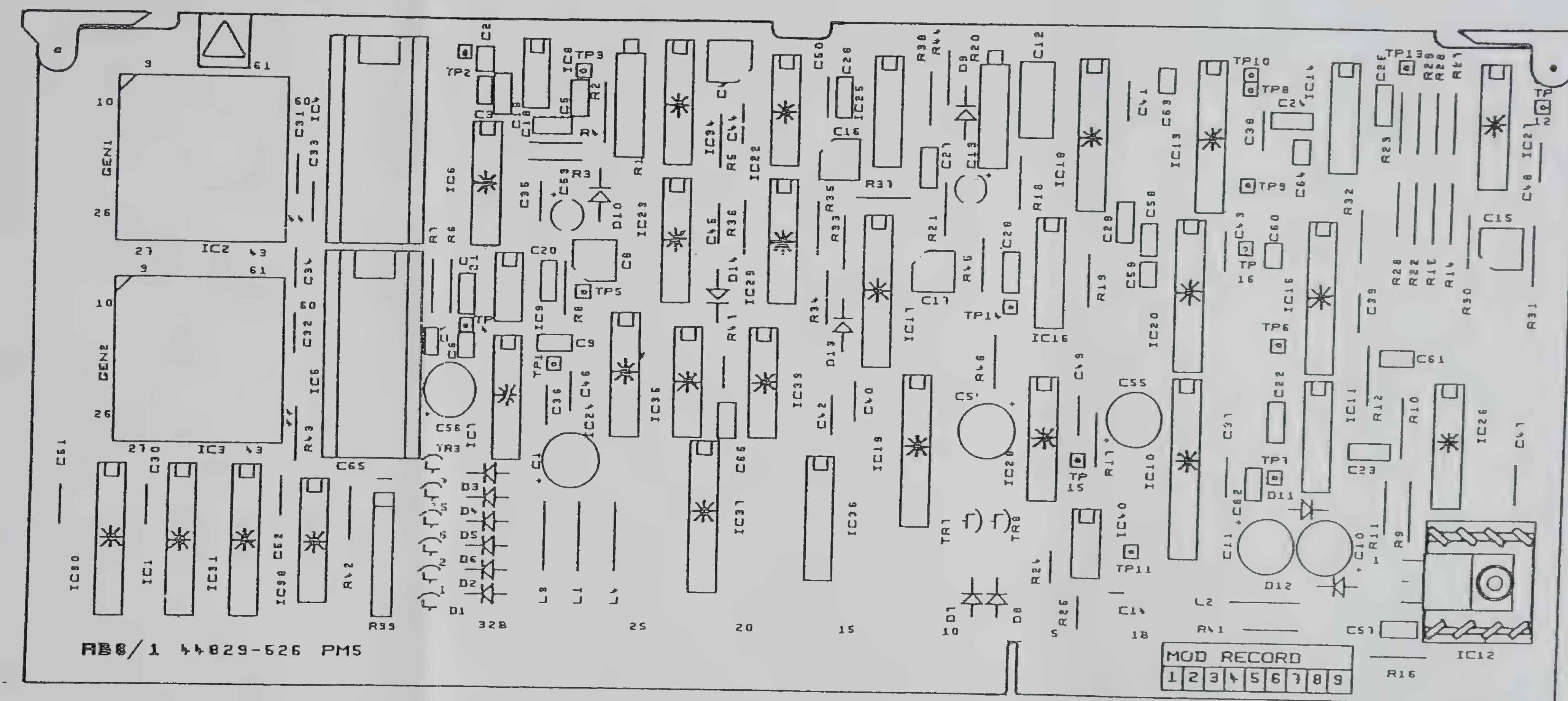


Fig. 7-33 Component layout of AF synthesizer board

Drg. No. 44829/526

Demodulation and scope board AB5/2

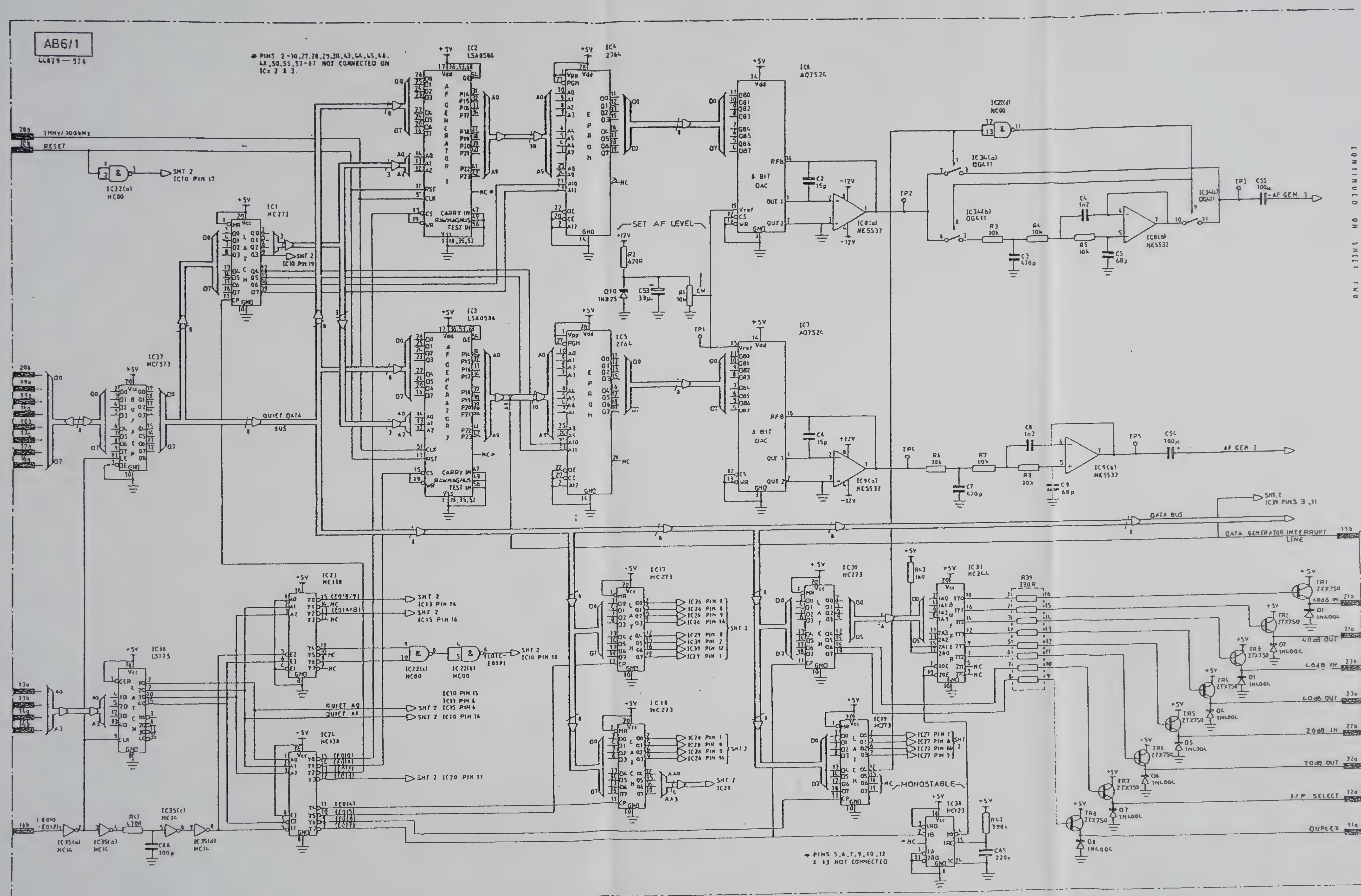
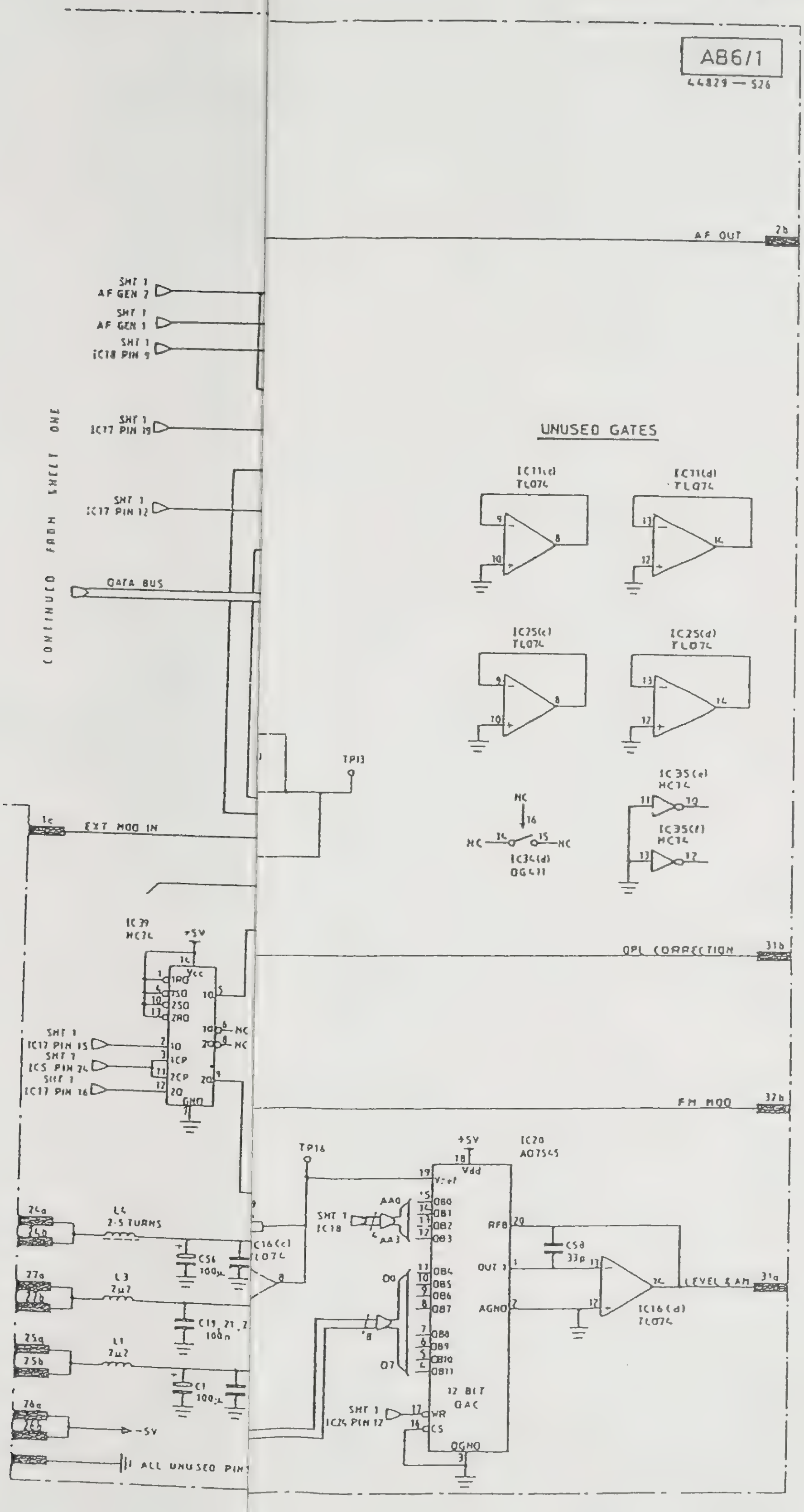


Fig. 7-34 Circuit diagram of AF synthesizer board (Dividers)

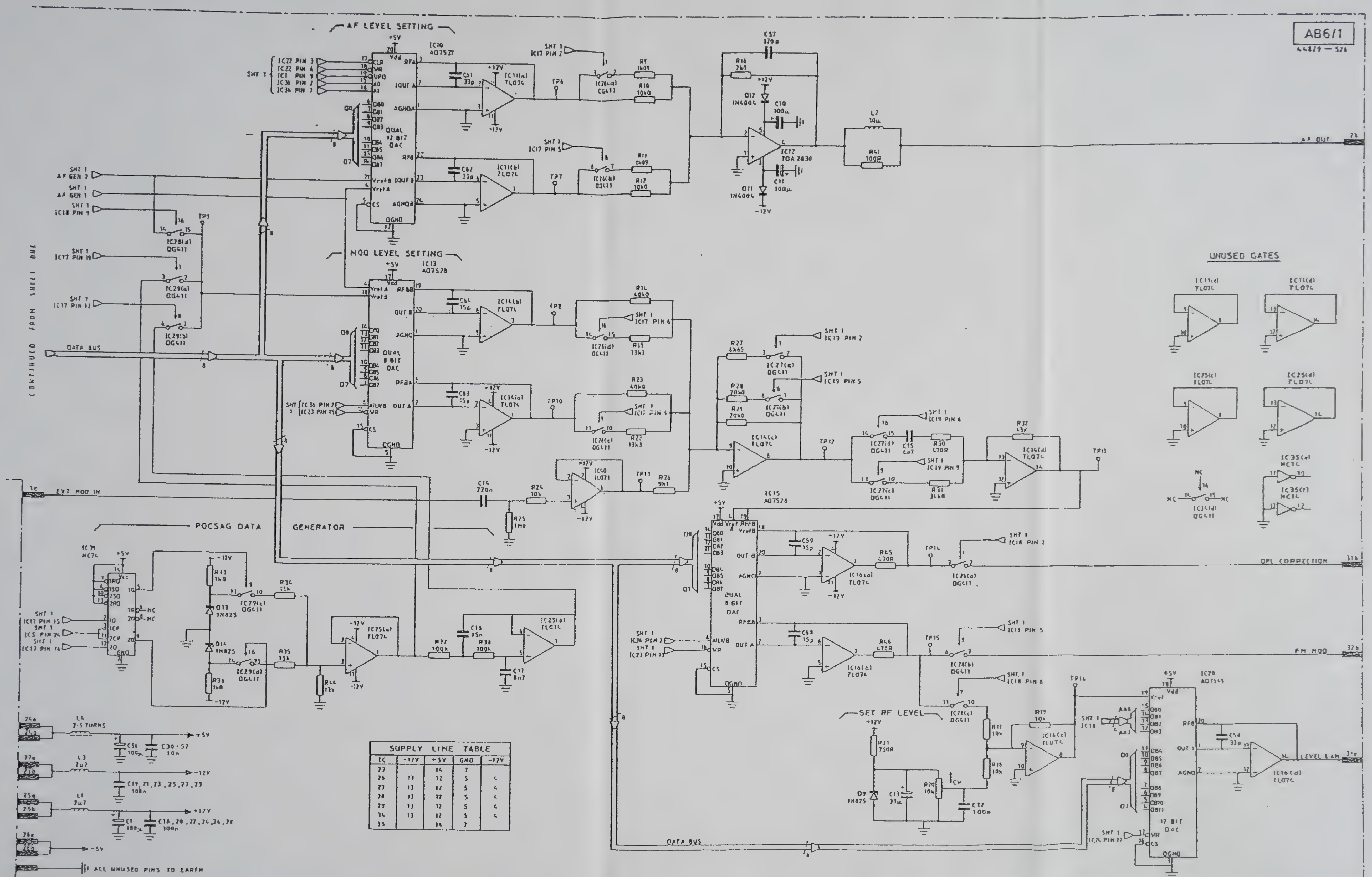
Drg. No. Z 44829/526 Sheet 1 Issue 1



Org. No. Z 44829/526 Sheet 2 Issue

Circuit diagram of AF synthesizer board (DAC)

AF synthesizer board AB6/1



SUPPLY LINE TABLE				
IC	+12V	+5V	GND	-12V
22		14	7	
26	13	12	5	4
27	13	12	5	4
28	13	12	5	4
29	13	12	5	4
34	13	12	5	4
35		14	7	

Drg. No. Z 44829/526 Sheet 2 Issue 3

Fig. 7-35 Circuit diagram of AF synthesizer board (DAC)

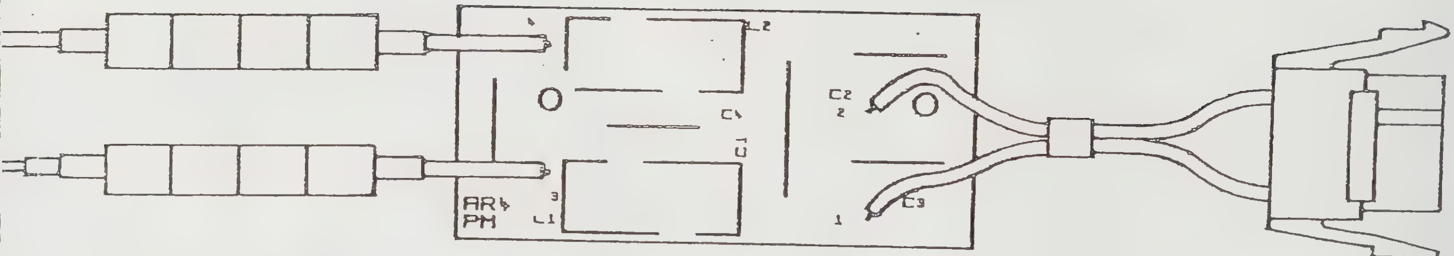
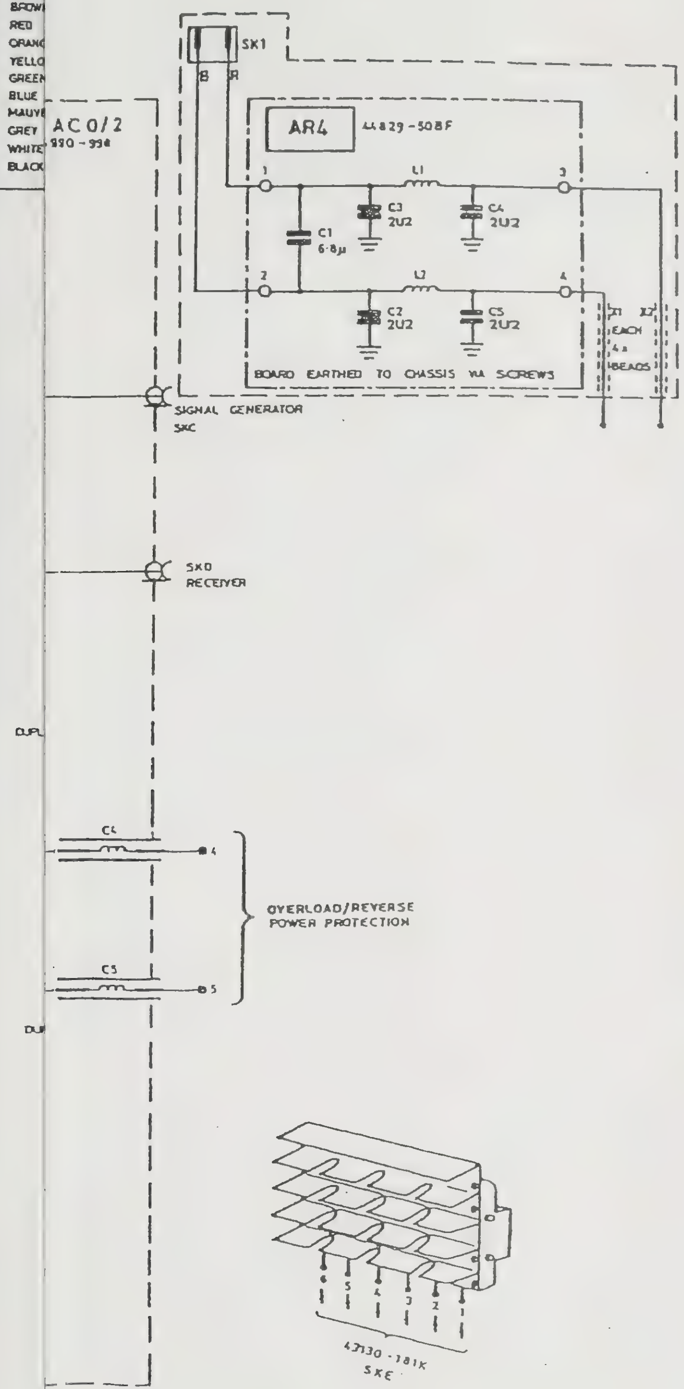


Fig. 7-36 Component layout of DC filter board

Drg. No. 44829/508

AC2	A81 PLM	COLOU
3	1	BROW
1	2	RED
6	3	ORANG
5	4	YELLO
NC	5	GREEN
NC	6	BLUE
NC	7	MAUVE
4	8	GREY
2	9	WHITE
NC	KEY	BLACK



Drg. No. Z 44828/876 Issue *gram of Input switching assembly and DC filter board*

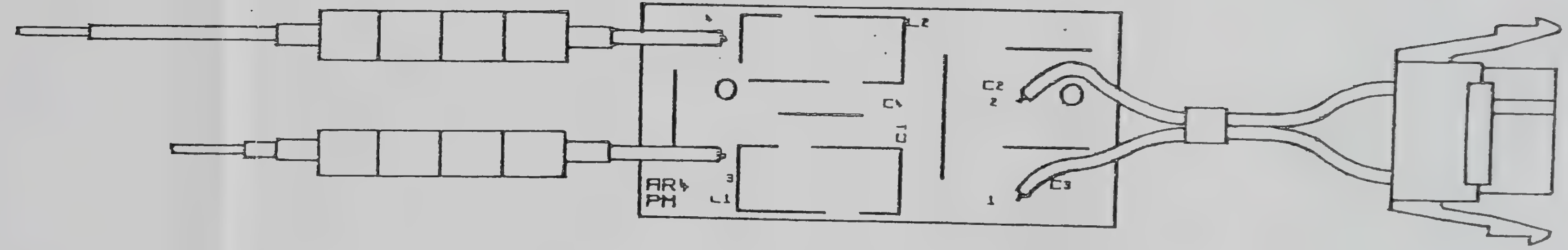
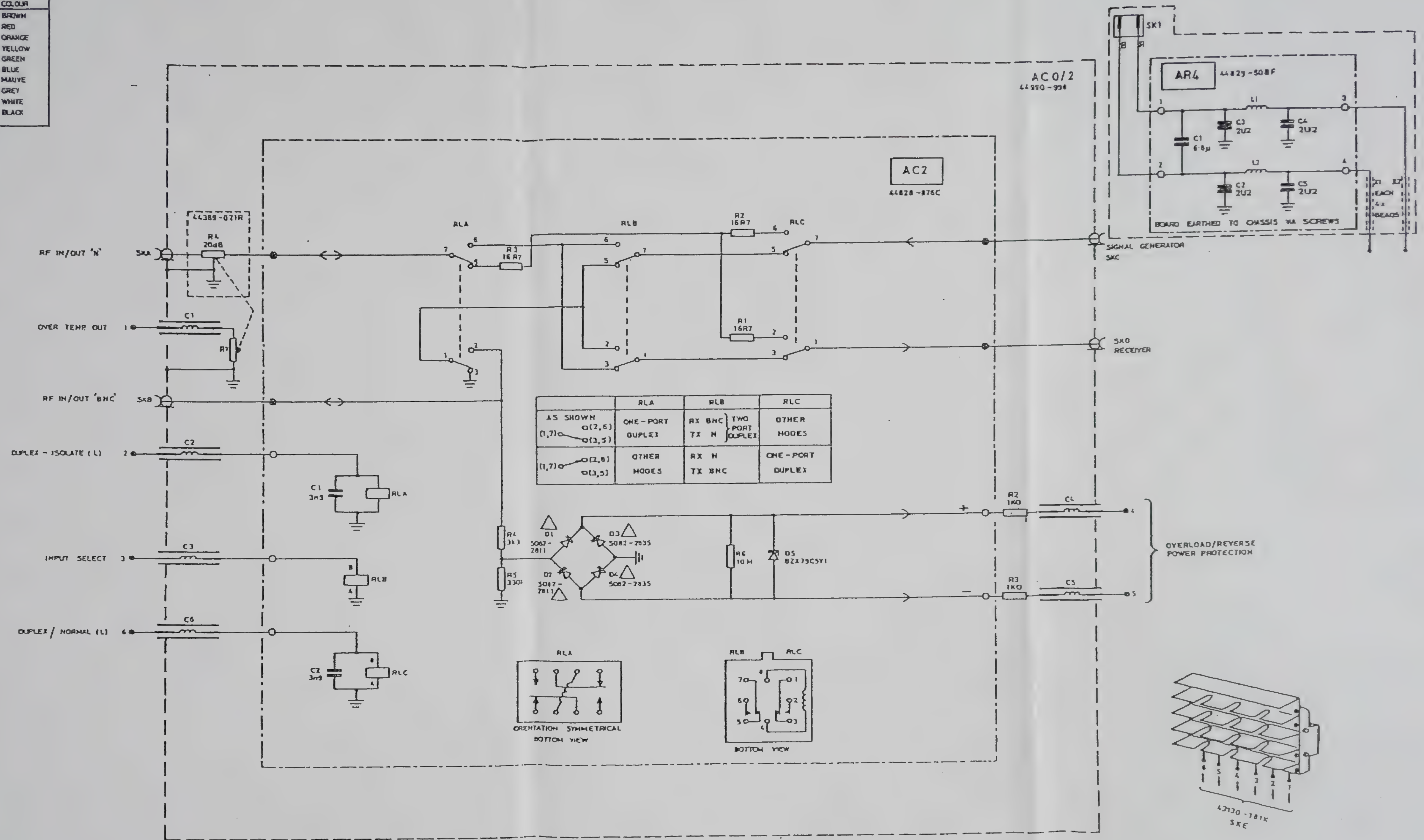


Fig. 7-36 Component layout of DC filter board

Drg. No. 44829/508

AF synthesizer board AB6/1

AC2	A81 PLM	COLOUR
3	1	BROWN
1	2	RED
6	3	ORANGE
5	4	YELLOW
NC	5	GREEN
NC	6	BLUE
NC	7	MAUVE
4	8	GREY
2	9	WHITE
NC	KEY	BLACK

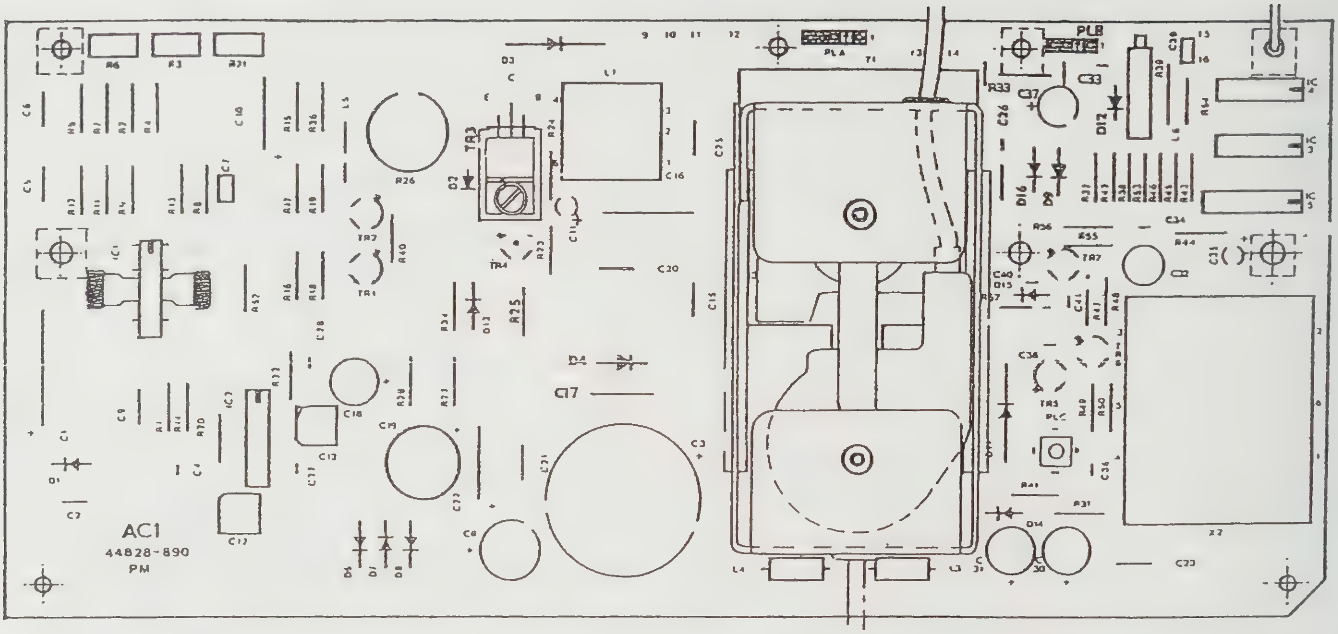


△ THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE.

Fig. 7-37 Circuit diagram of Input switching assembly and DC filter board

Drg. No. Z 44828/876 Issue 8

AC1 & AT2



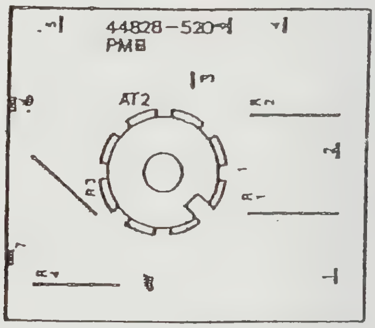
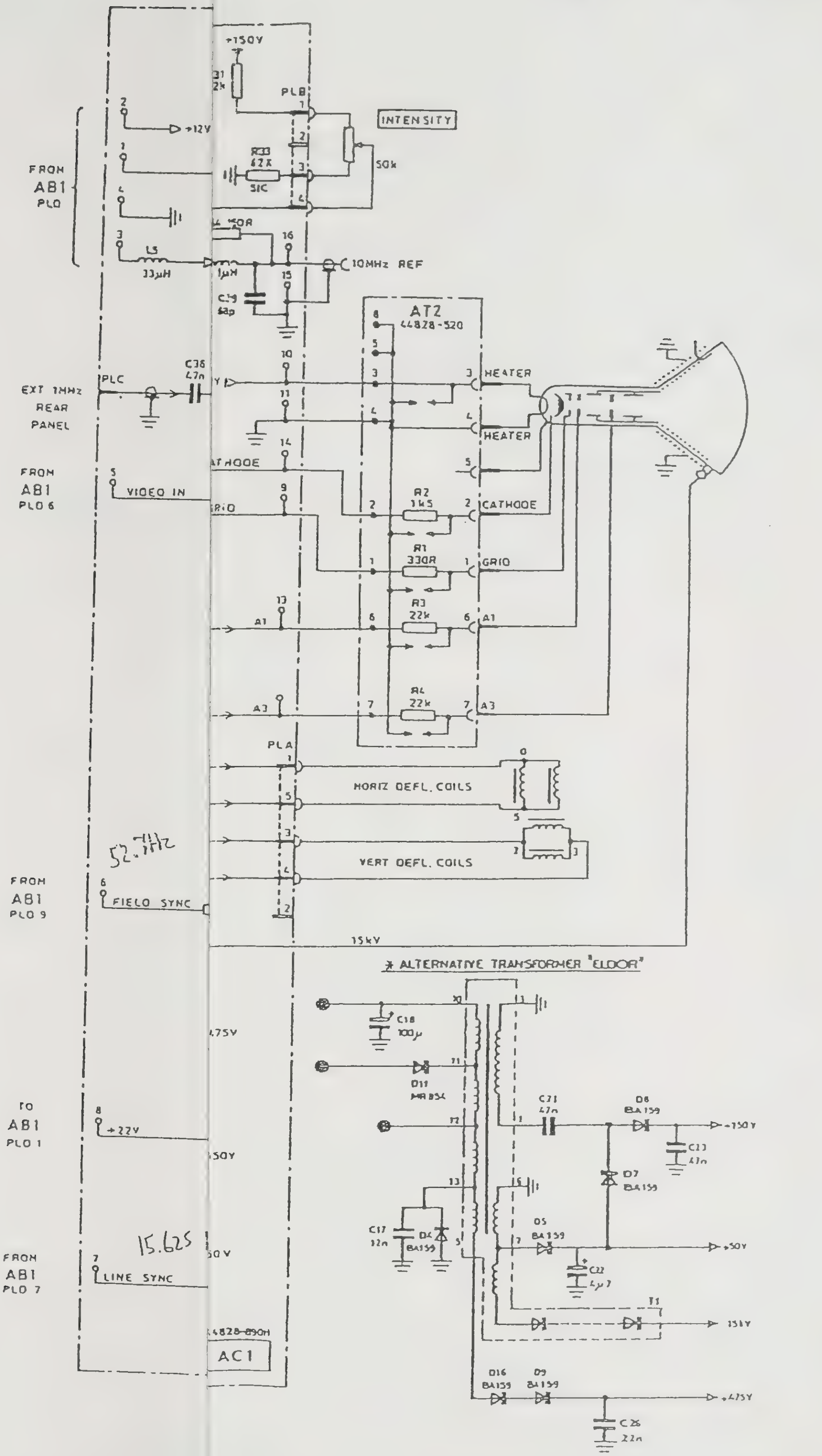


Fig. 7-38 Component layout of CRT drive board and CRT base board

Drg. No. 44828/890 & 44828/520



Drg. No. Z 44828/890 Issue 16

diagram of CRT drive board and CRT base board

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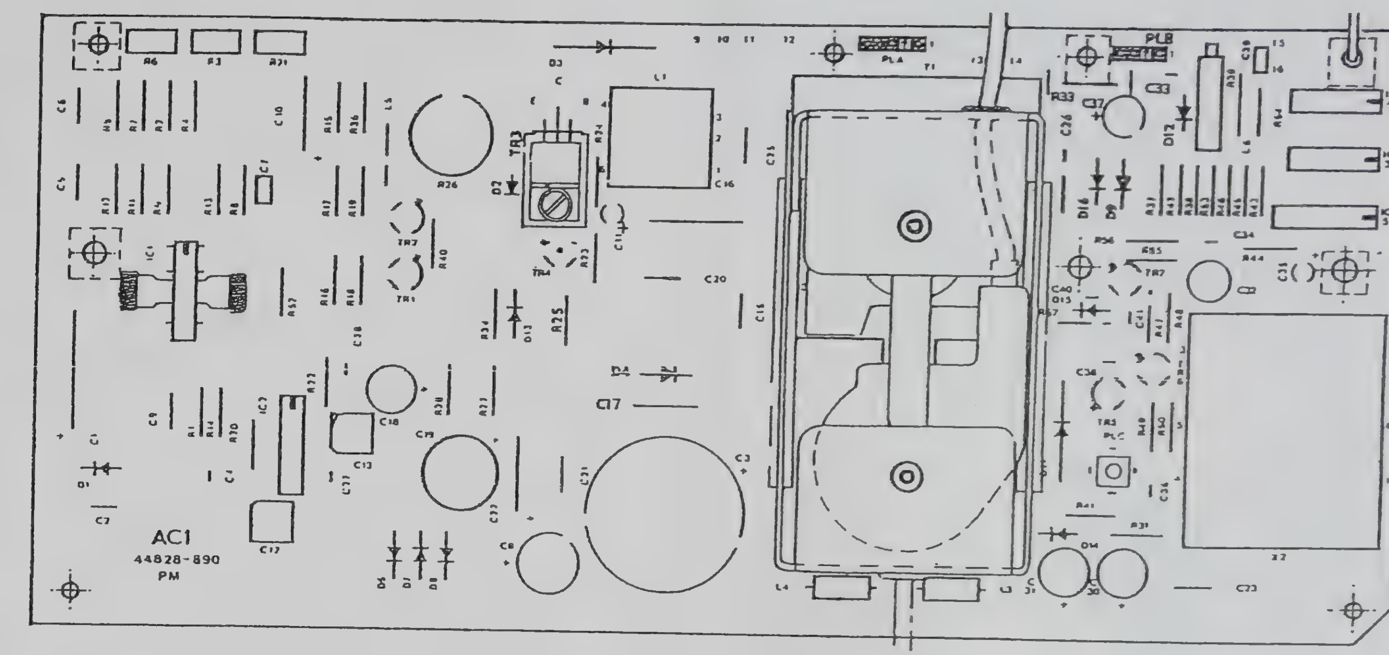


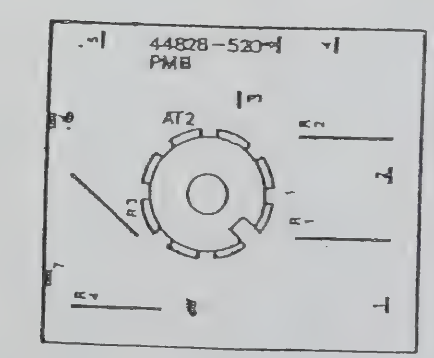
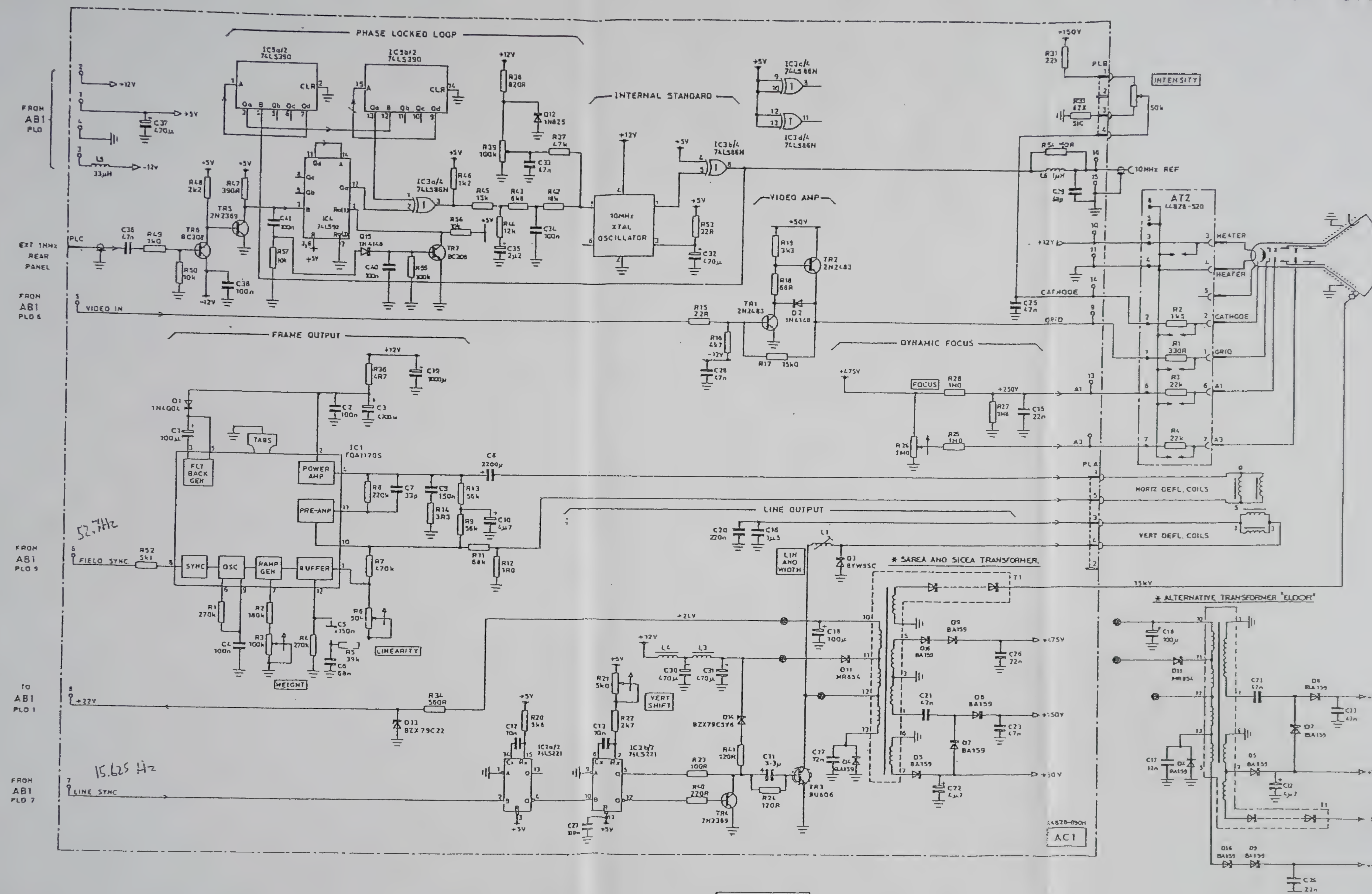


Fig. 7-38 Component layout of CRT drive board and CRT base board

Drg. No. 44828/890 & 44828/520

Input switching assy AC0/2 & DC filter board AR4



SUPPLY LINE TABLE		
IC	+5V	GROUND
IC2	16	8
IC3	14	7
IC4	5	10
IC5	16	8

Drg. No. Z 44828/890 Issue 16

Fig. 7-39 Circuit diagram of CRT drive board and CRT base board

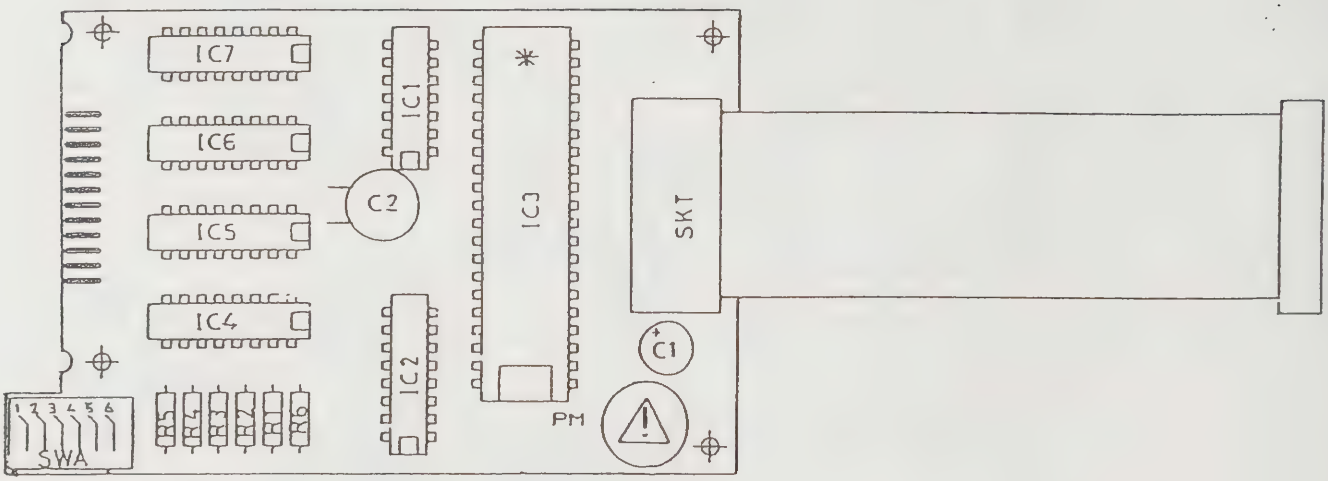
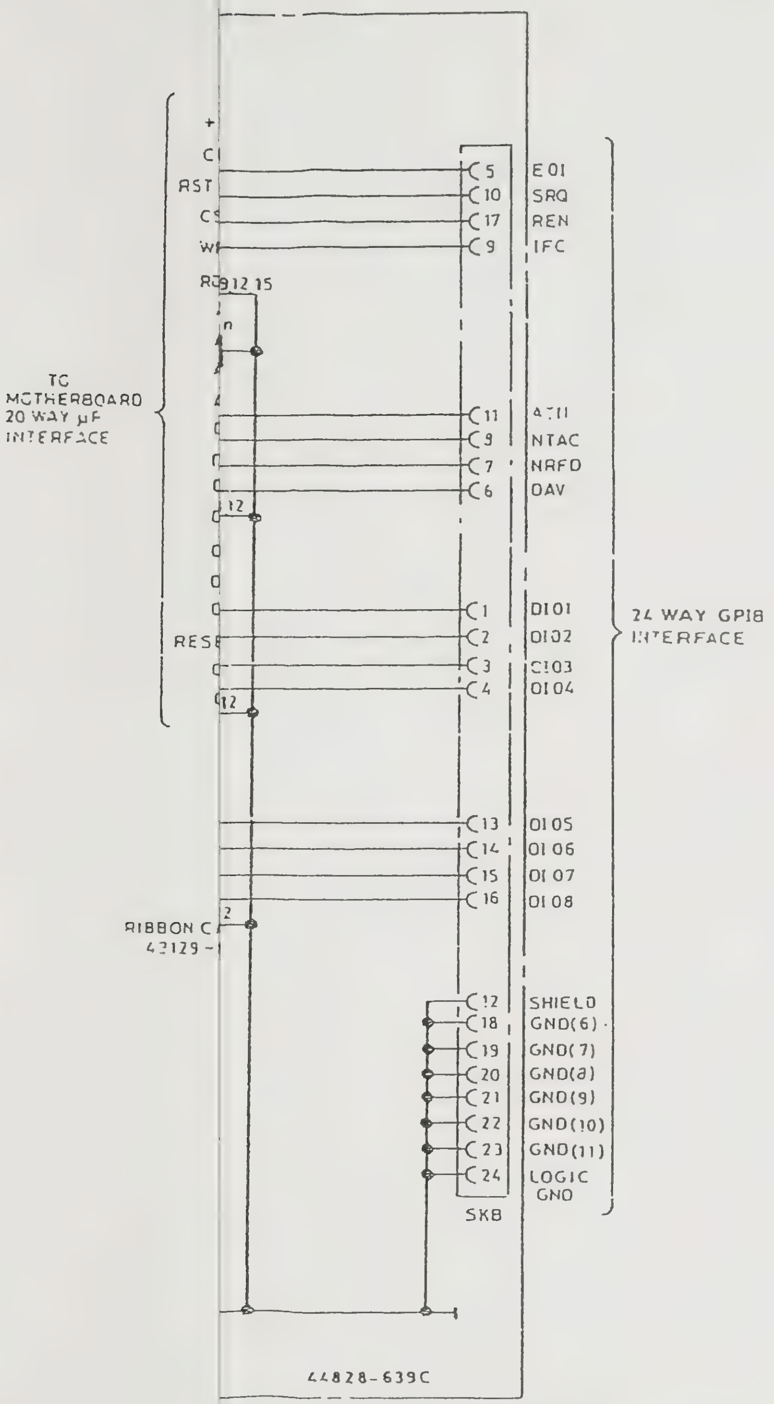


Fig. 7-40 Component layout of GPIB interface unit

Drg. No. 44828/639



Drg. No. Z 44828/639 Issue 1

Fig. 7-41 Circuit diagram of GPIB interface unit

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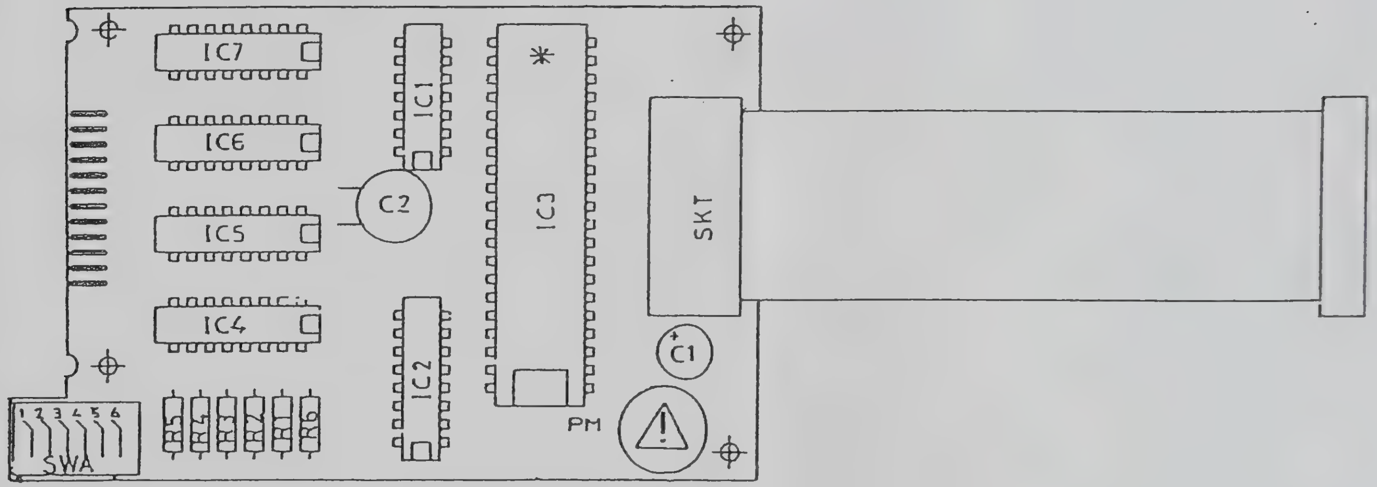
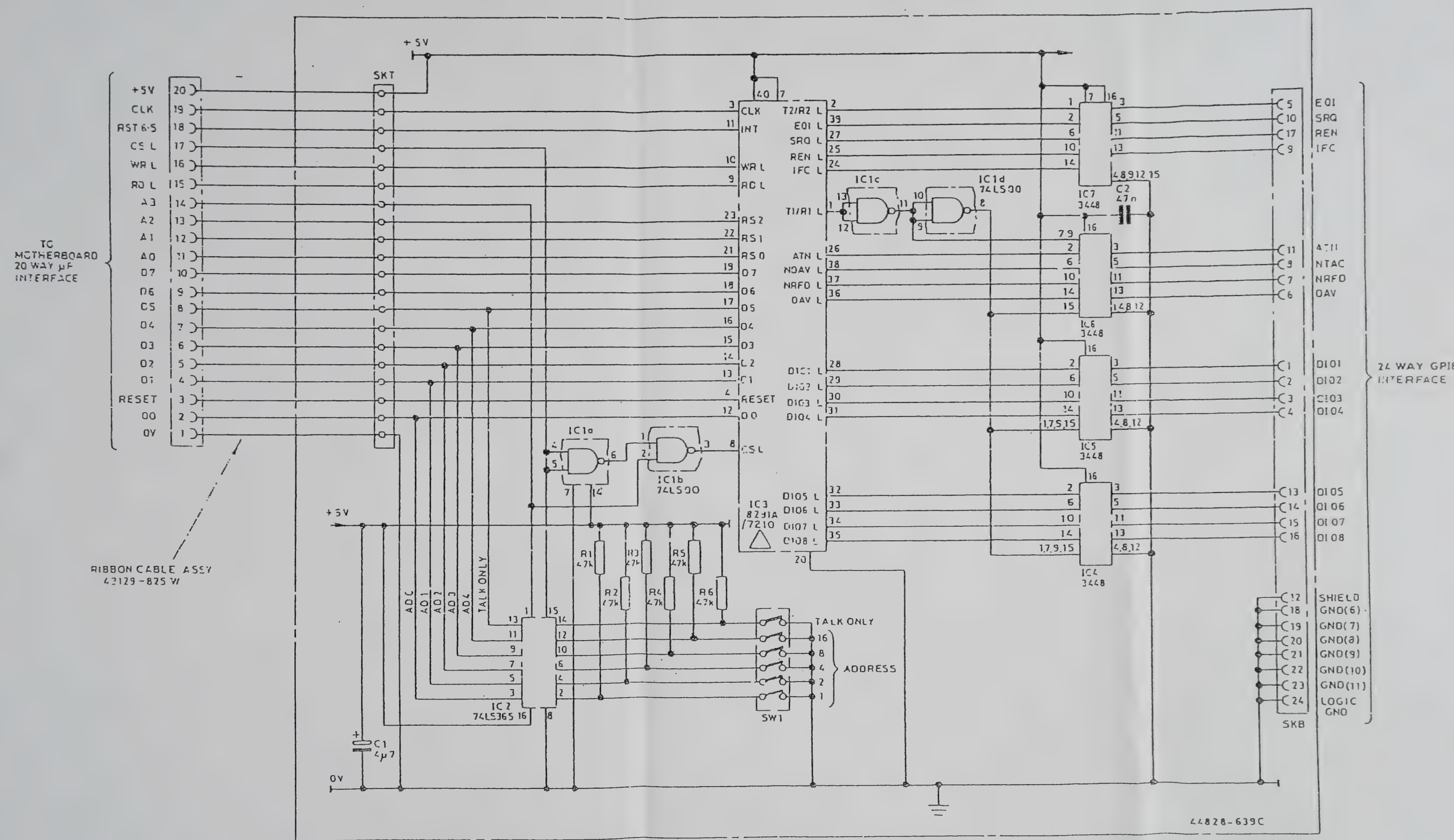


Fig. 7-40 Component layout of GPIB interface unit

Drg. No. 44828/639

CRT drive board AC1 & CRT base board AT2

COMPONENT MARKED △ IS STATIC SENSITIVE, PRECAUTIONS AS PER WP 6105.
IC2 ADDRESS = CS L = $\overline{A3}$
IC3 ADDRESS = CS L = A3



Drg. No. Z 44828/639 Issue 1

Fig. 7-41 Circuit diagram of GPIB interface unit

46882-114B
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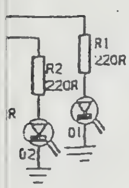
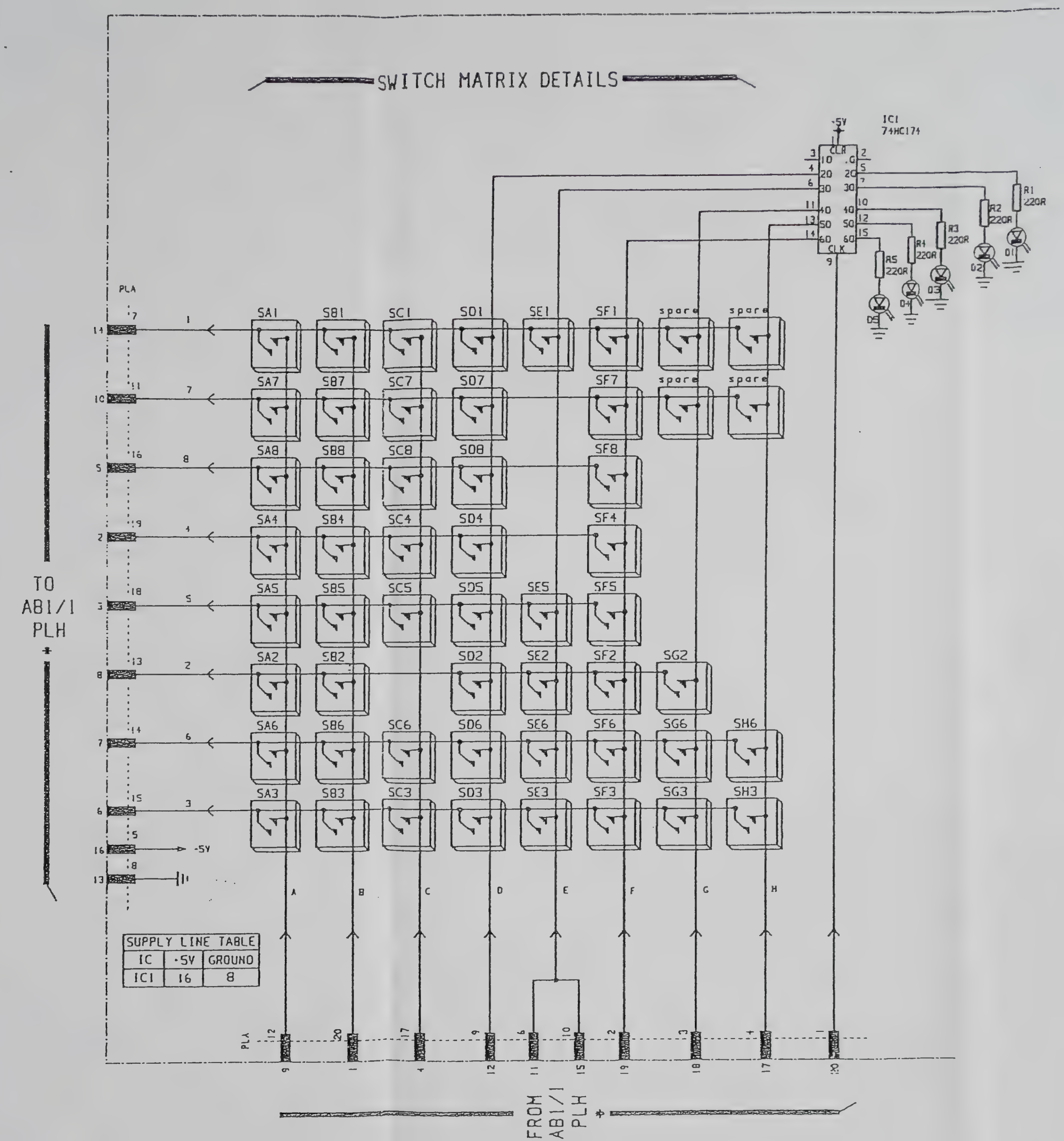


Drg. No. Z 46662/450 Sheet 4

Fig. 7-42 Circuit diagram of Main keyboard

GPIB interface unit AD1



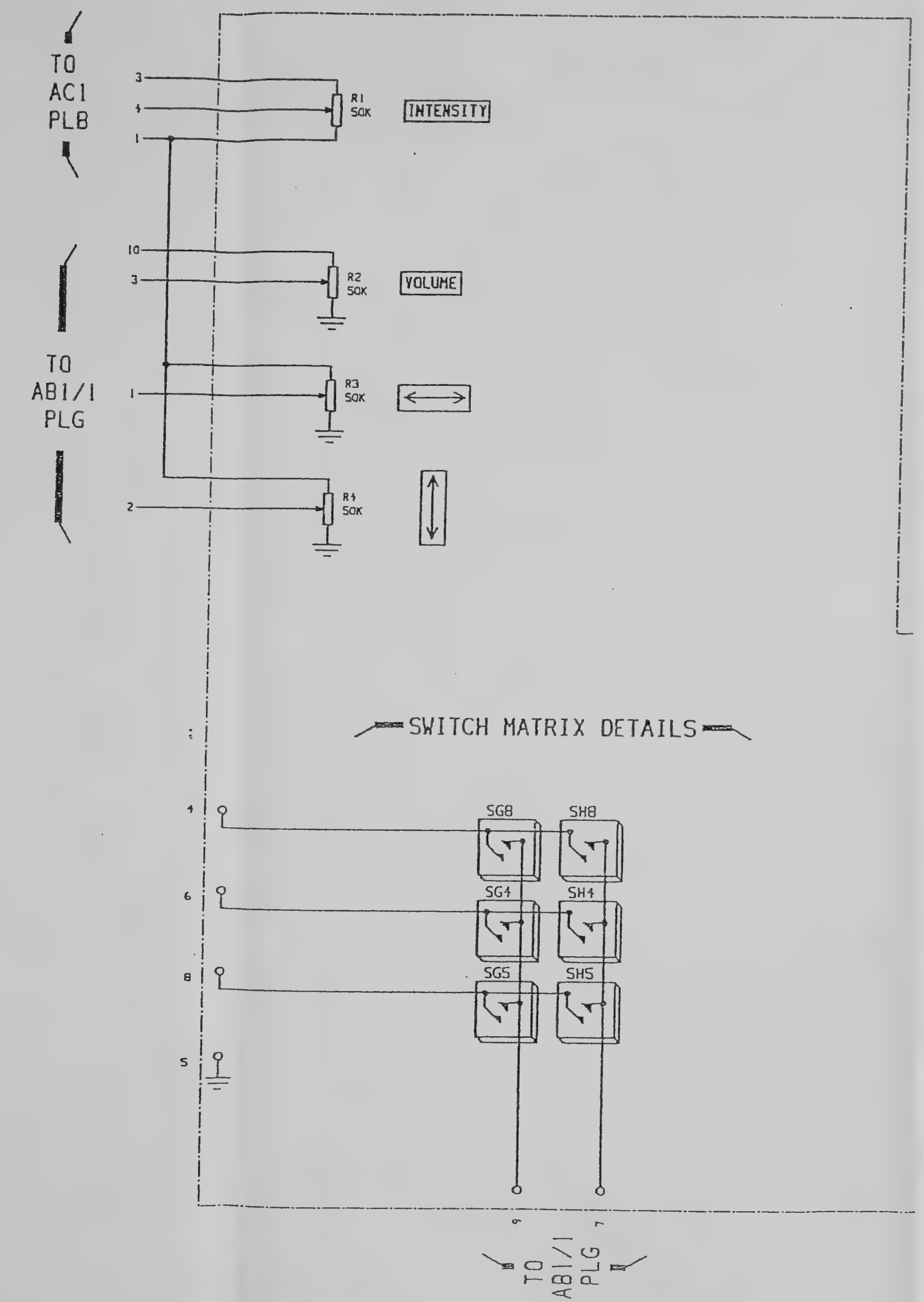
Drg. No. Z 46662/450 Sheet 4

Fig. 7-42 Circuit diagram of Main keyboard

Drg. No. Z 46662/450 Sheet 5

Fig. 7-43 Circuit diagram of Scope keyboard

Main keyboard AF1/2



Drg. No. Z 46662/450 Sheet 5

Fig. 7-43 Circuit diagram of Scope keyboard

AR1/1

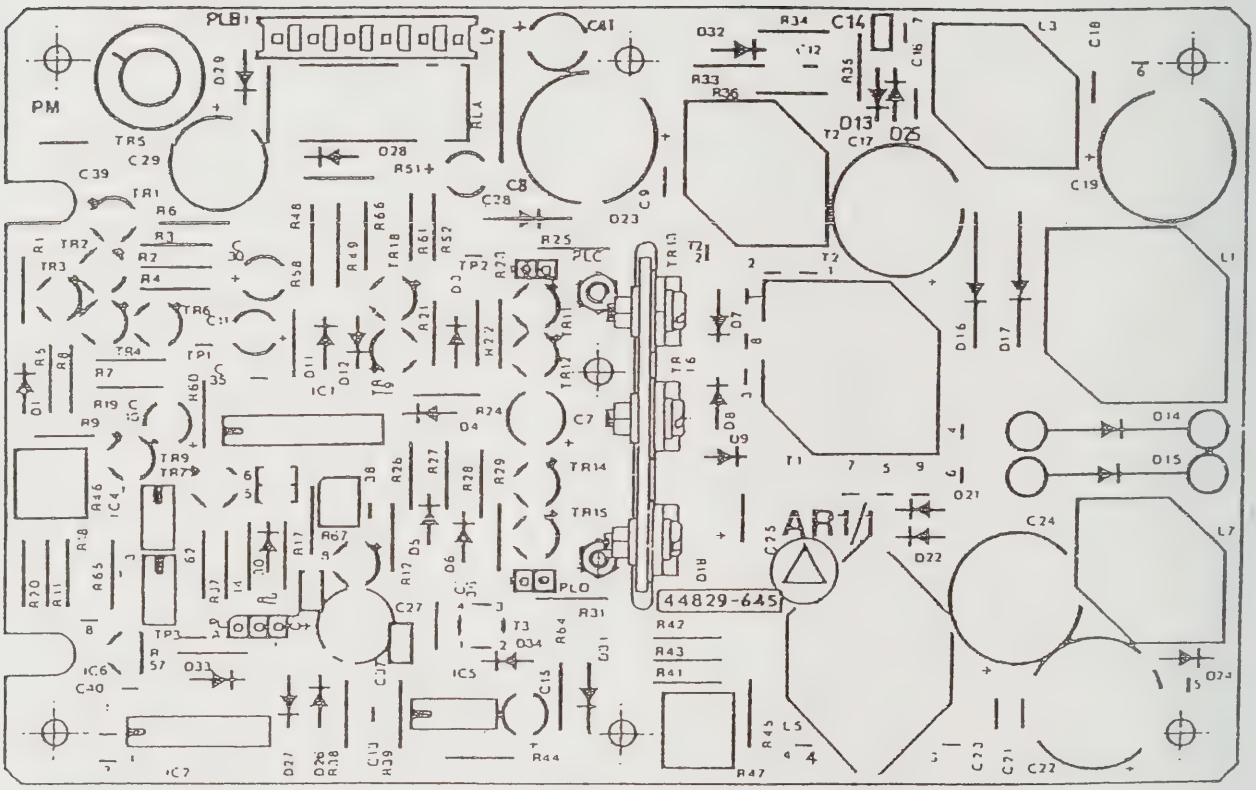
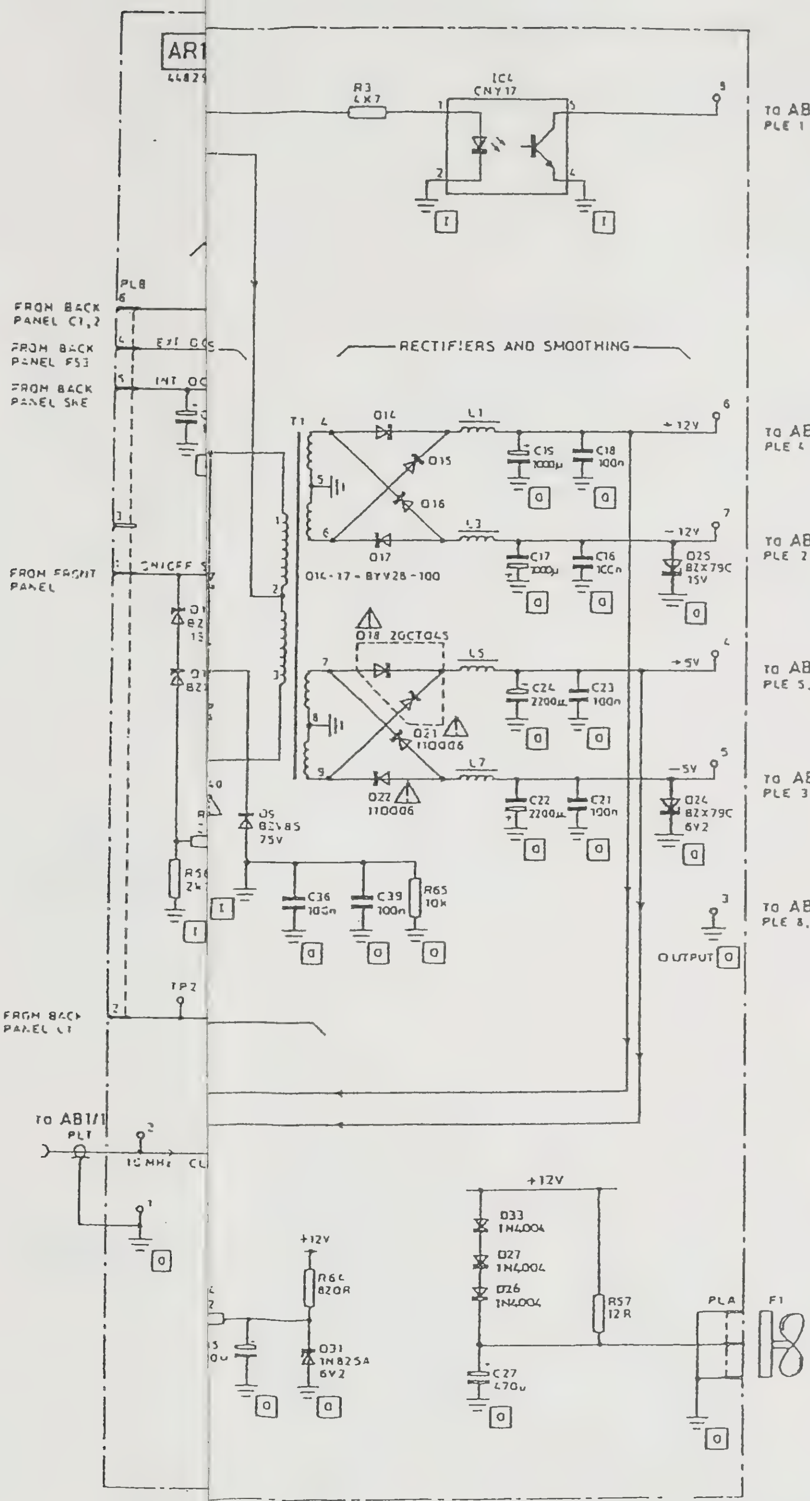


Fig. 7-44 Component layout of Power supply board

Drg. No. 44829/645

AR1/1



Drg. No. Z 44829/645 Issue 4

Fig. 7-45 Circuit diagram of Power supply board

AR1/1

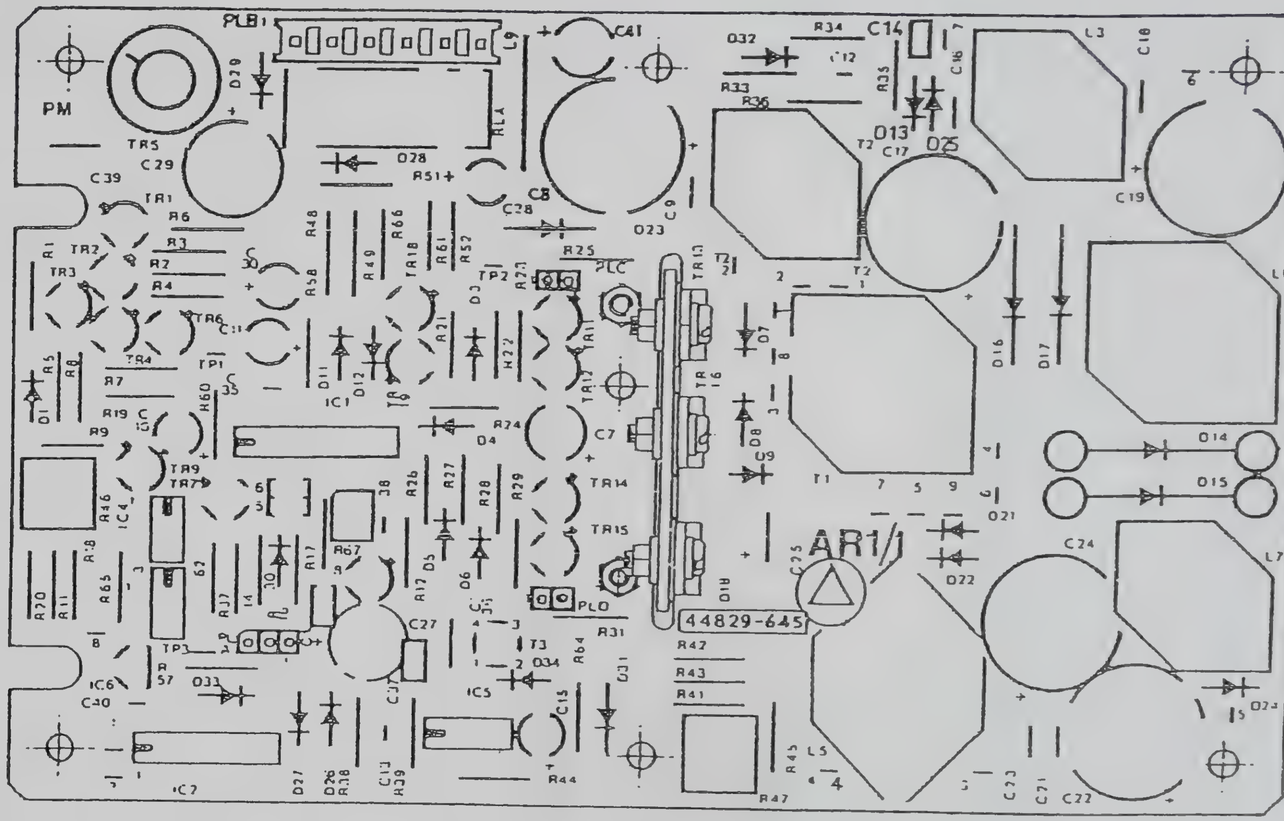
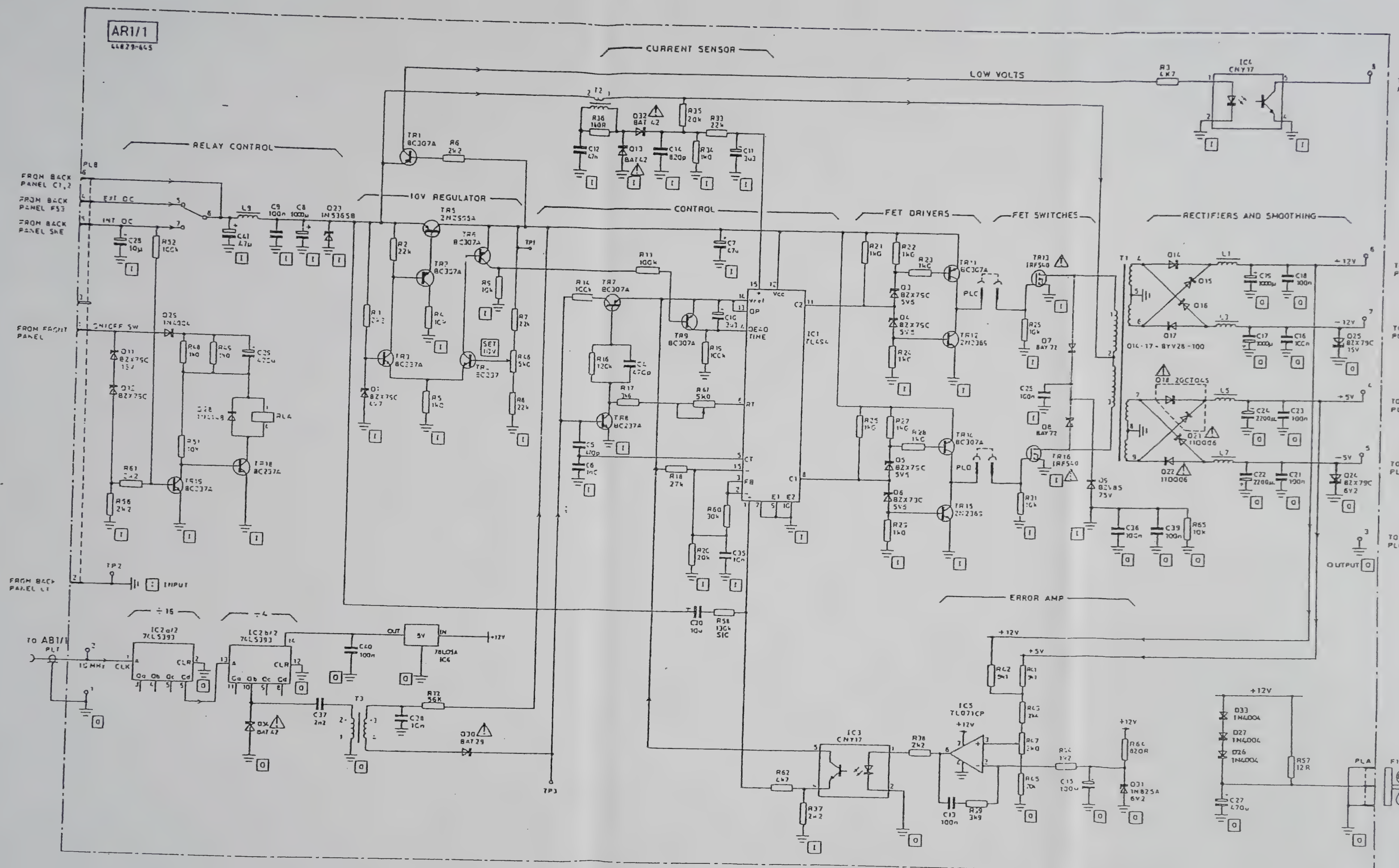


Fig. 7-44 Component layout of Power supply board

Drg. No. 44829/645

Scope keyboard AF2/2

AR1/1



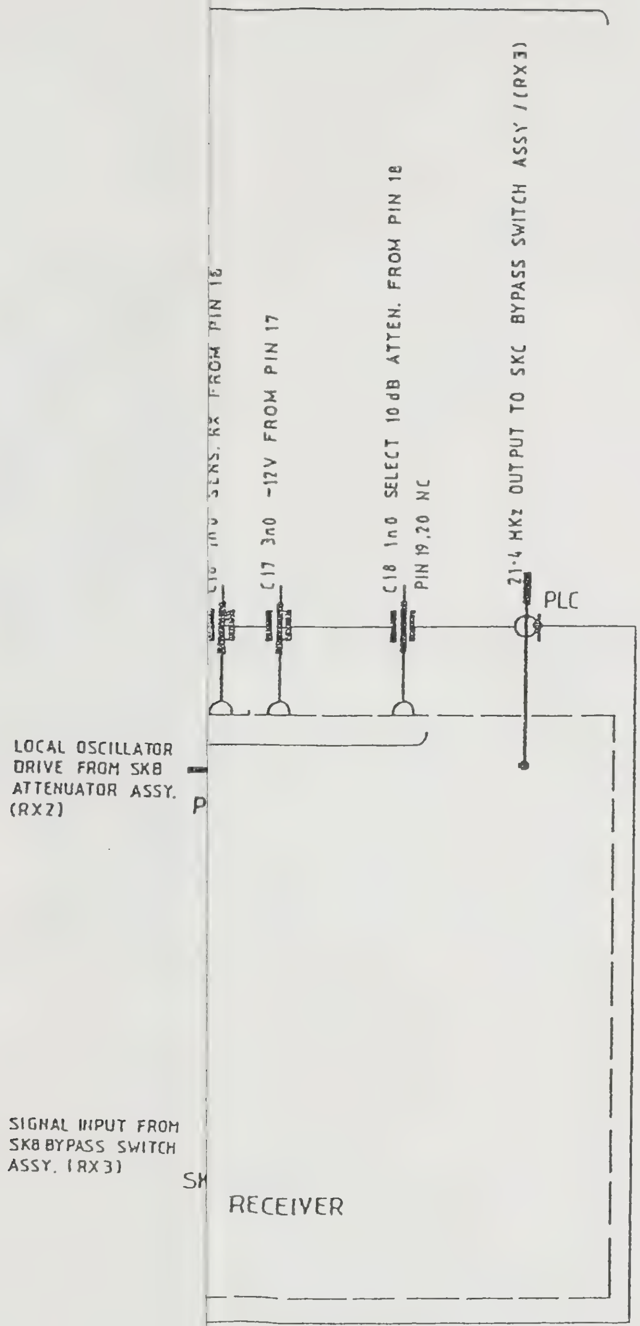
SUPPLY LINE TABLE		
IC		GROUND
IC2		7

⚠ THIS SYMBOL INDICATES A STATIC-SENSITIVE DEVICE.

Drg. No. Z 44829/645 Issue 4

Fig. 7-45 Circuit diagram of Power supply board

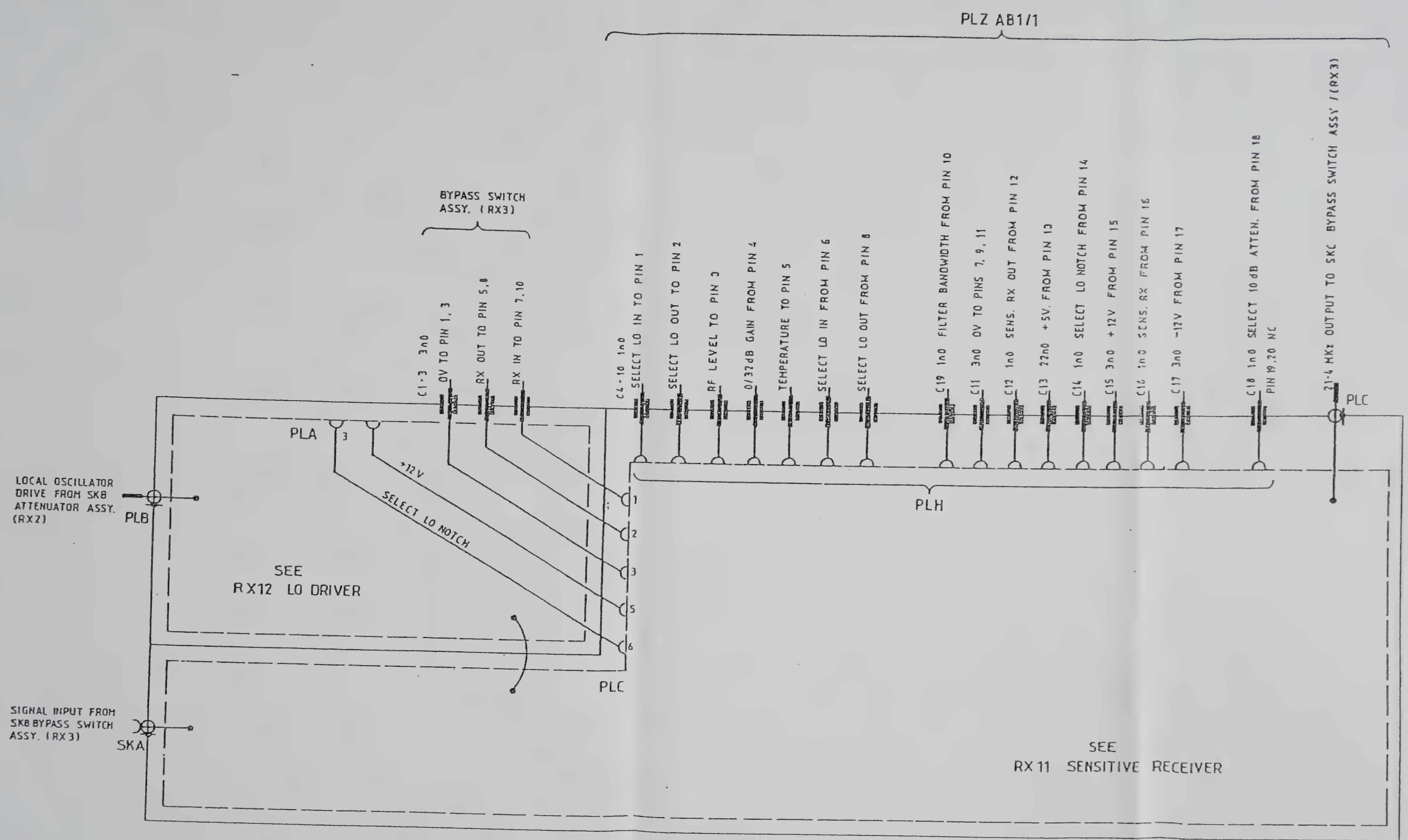
RX1



Drg. No. Z 44990/879 Issue 3

46 *Circuit diagram of Receiver tray assembly*

Power supply board AR1/1



Org. No. Z 44990/879 Issue 3

Fig. 7.46 Circuit diagram of Receiver tray assembly

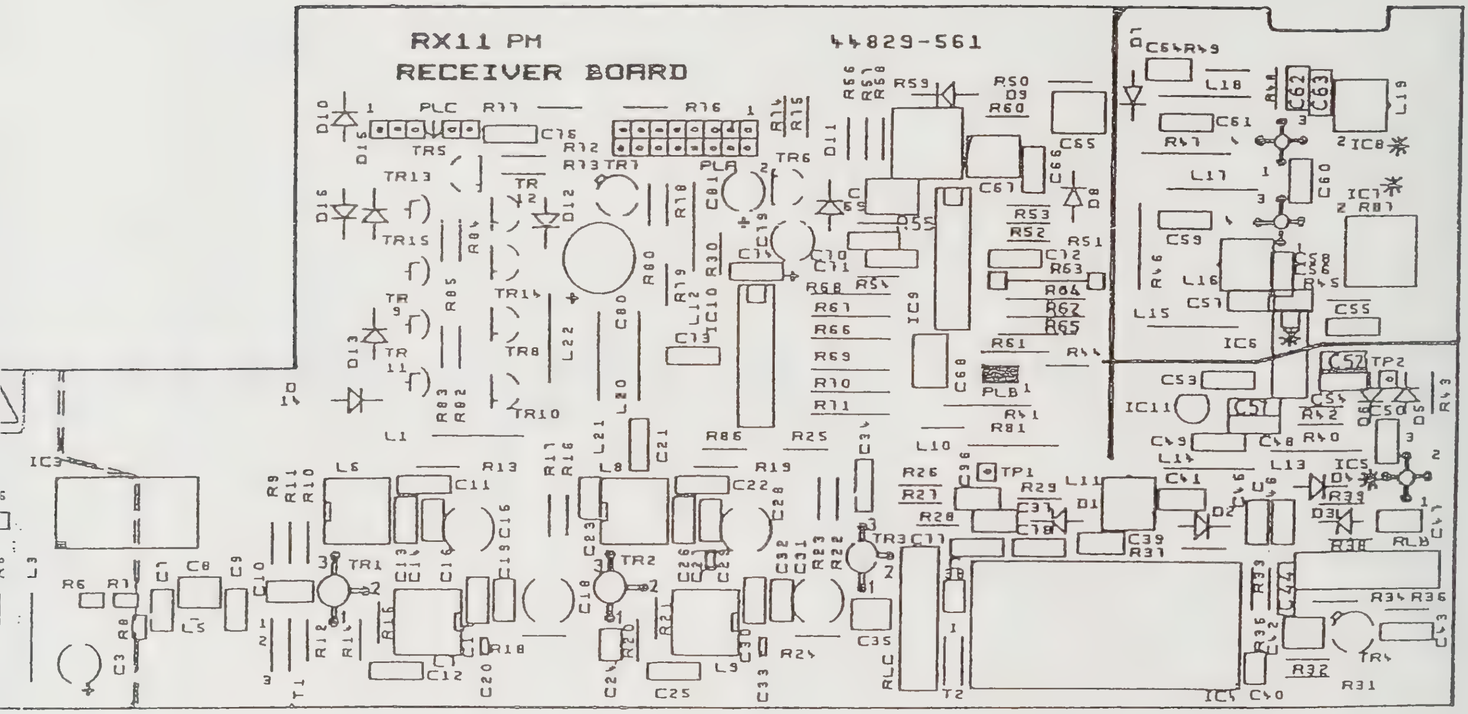
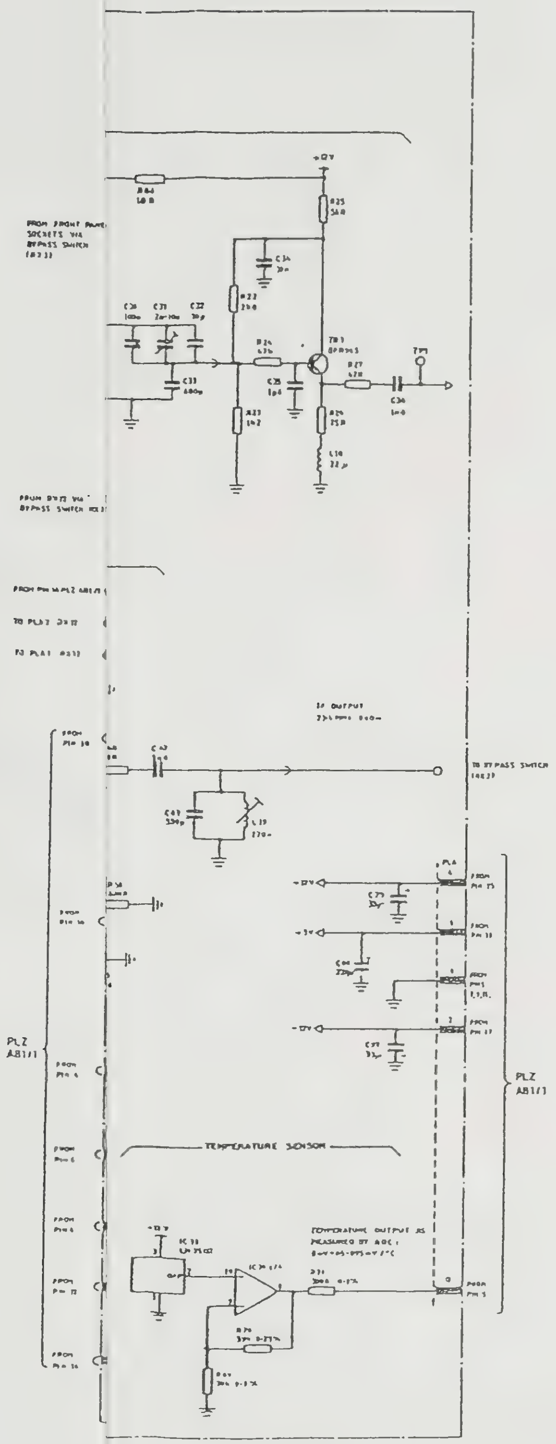


Fig. 7-47 Component layout of Sensitive receiver board

Drg. No. 44829/561



Org. No. Z 44829/561 Issue 11

7-48 Circuit diagram of Sensitive receiver board

46882-114B
Dec. 91

RX11

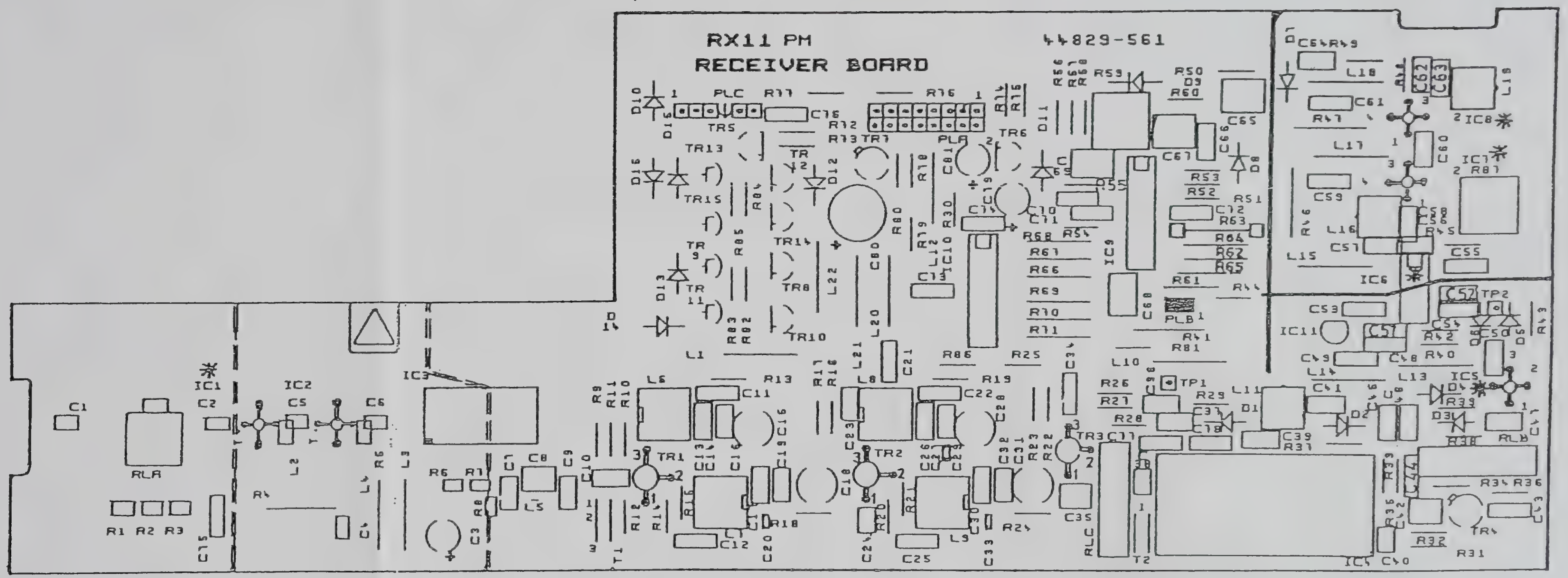
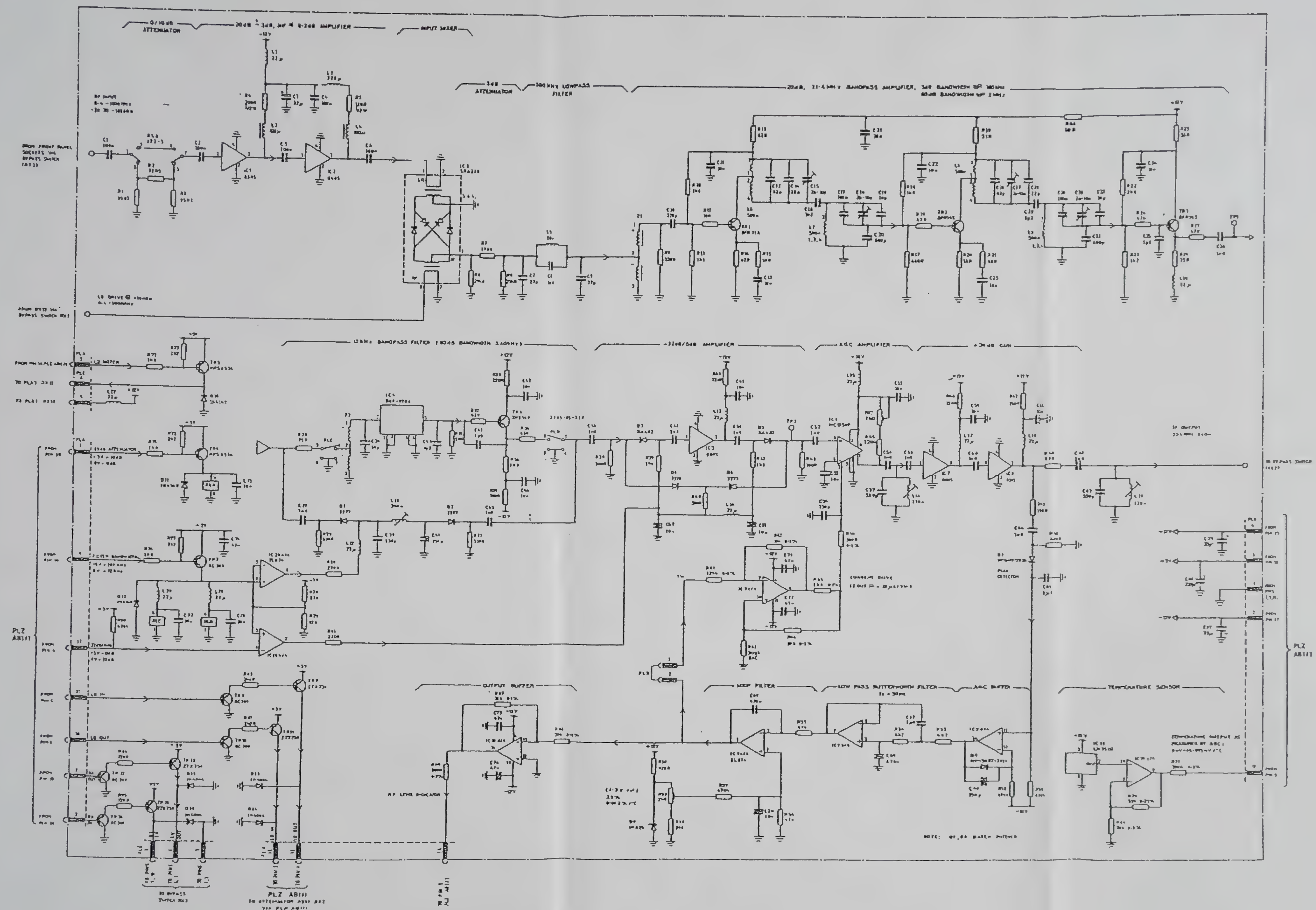


Fig. 7-47 Component layout of Sensitive receiver board

Drg. No. 44829/561

Receiver tray assembly RX1



Drg. No. Z 44829/561 Issue 11

Fig. 7-48 Circuit diagram of Sensitive receiver board

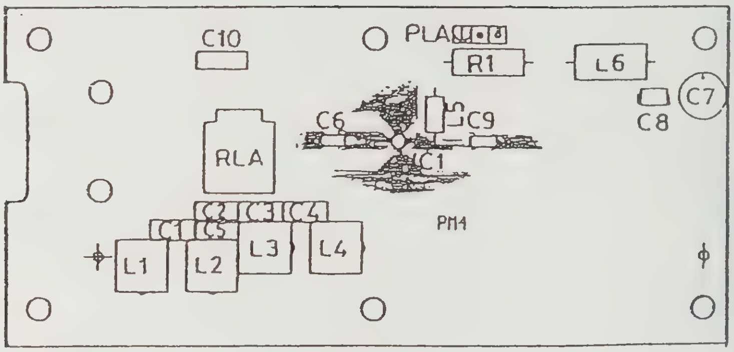
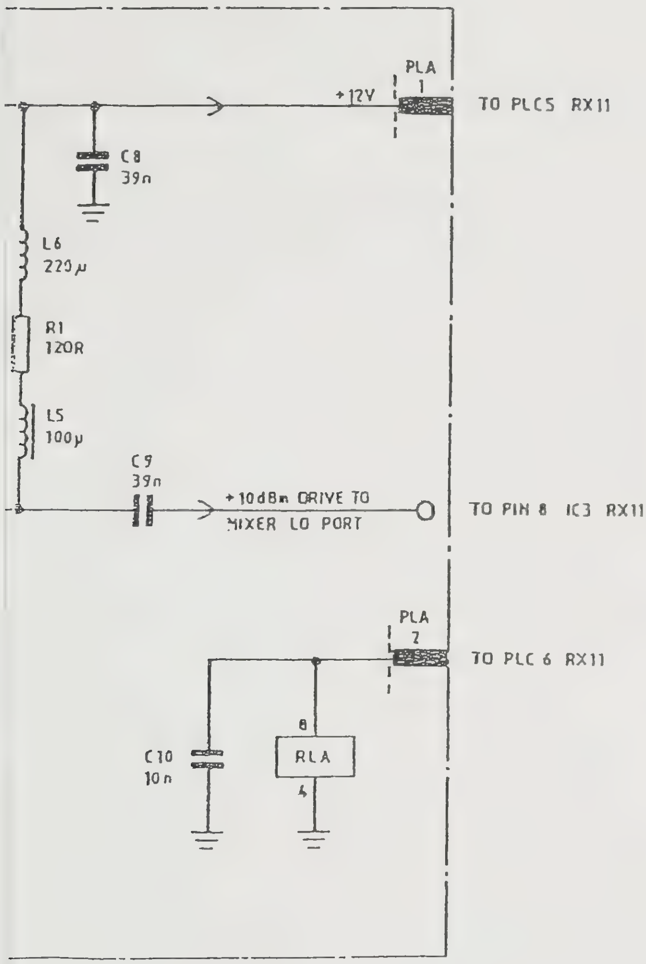


Fig. 7-49 Component layout of Local oscillator driver board

Drg. No. 44829/594



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Circuit diagram of Local oscillator driver board

RX12

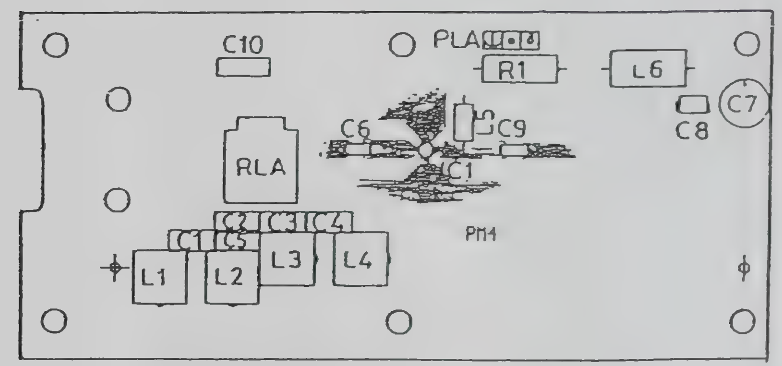

Fig. 7-49 Component layout of Local oscillator driver board

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Sensitive receiver board RX11

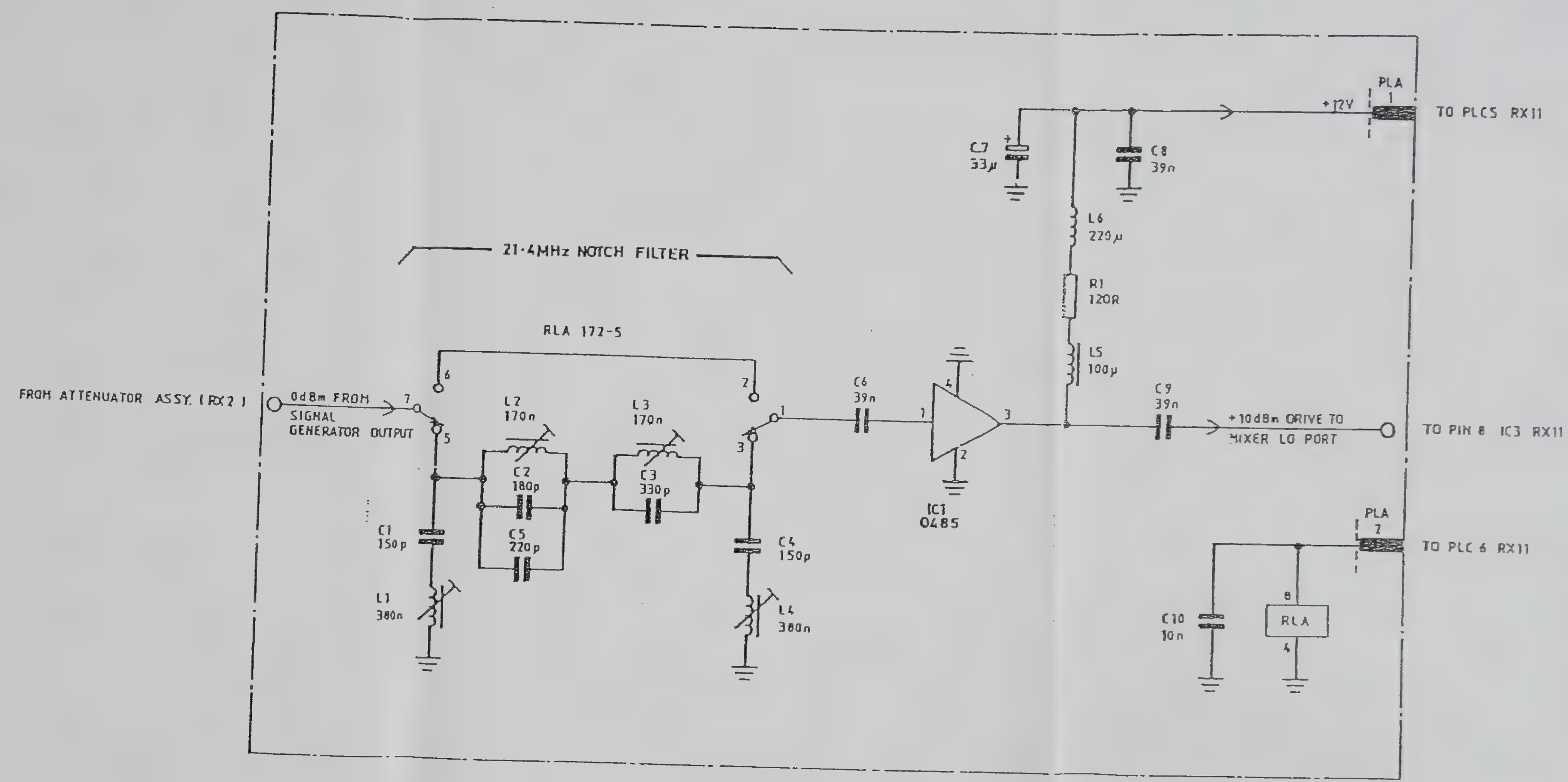

Fig. 7-50 Circuit diagram of Local oscillator driver board

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